* NOTICES *

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CLAIMS

[Claim(s)]
[Claim 1]An object image is monitored by an electronic view finder characterized by comprising the following, and it is a camera which can be exposed on a film with a magnetic recording part about this monitor image.
light flux which carries out image formation on the above-mentioned film plane -- this image formation -- abbreviated -- a light dividing means divided into the same image.
An imaging means which picturizes the above-mentioned luminous flux splitting in order to monitor the above-mentioned object image.
exposing on the above-mentioned film -- abbreviated -- an exposure information memory measure which memorizes information from the above-mentioned imaging means to the same timing.
A magnetic recording means which carries out magnetic recording of exposure information memorized by the above-mentioned exposure information memory measure at least and the corresponding address information to a magnetic recording part of the above-mentioned film.

[Claim 2]An image processing unit into which a picture printed after development using exposure information memorized by film which has a magnetic recording part is processed, comprising:
A displaying means which reads exposure information memorized by the above-mentioned film, and is displayed on a monitor.
An image processing means which processes picture information displayed on the above-mentioned displaying means.
A recording device which records processing existence information on whether it was processed by a described image processing means on a magnetic recording part of the above-mentioned unexposed film.
A processing information memory measure which memorizes image processing information at

the time of being processed by a described image processing means.

[Claim 3]An image processing unit into which a picture printed after development using exposure information memorized by film which has a magnetic recording part is processed, comprising:
A displaying means which reads exposure information memorized by the above-mentioned film, and is displayed on a monitor.
An image processing means which processes picture information displayed on the above-mentioned displaying means, and a magnetic recording means which records image processing information processed by a described image processing means on a magnetic recording part of the above-mentioned unexposed film.

[Detailed Description of the Invention]
[0001]
[Industrial Application]This invention relates to the image processing unit which processes it into the picture concerning the object image which was photoed with the camera which photos an object image using a silver halide film, and this camera, and which was carried out.
[0002]
[Description of the Prior Art]The art of providing printing [which a user wishes] is proposed by providing a magnetic recording part outside the screen of a silver halide film, and recording print number of sheets, trimming information, exposure correction information, etc. on this magnetic recording part conventionally (example 1 of precedence).
[0003]A silver halide film is scanned with an image scanner, image data is downloaded to a computer, this image data is processed arbitrarily, and the art which outputs a print via a hard printer is proposed (example 2 of precedence).
[0004]
[Problem(s) to be Solved by the Invention]However, since the art concerning the above-mentioned example 1 of precedence was using ready-made language laboratory system as the base, the processible range was restricted to exposure correction and trimming. In the art concerning the above-mentioned example 2 of precedence, since equipment of an image scanner, a printer, etc. was expensive, in order to go to a service station etc. in order to use this equipment, and also to incorporate image data, the film developed negatives had to be prepared.
[0005]Before simultaneous printing is carried out, the place which this invention was made in light of the above-mentioned problems, and is made into the purpose clarifies the information which should be corrected by the picture of the film taken a photograph, and there is in obtaining the print which correction which a photography person makes on a request based on this information accomplished.
[0006]
[Means for Solving the Problem]To achieve the above objects, in a camera by the 1st mode of this invention. In [monitor an object image by an electronic view finder, and] a camera which can be exposed on a film with a magnetic recording part this monitor image, light flux which carries out image

formation on the above-mentioned film plane -- this image formation -- abbreviated -- with a light dividing means divided into the same image. An imaging means which picturizes the above-mentioned luminous flux splitting in order to monitor the above-mentioned object image, exposing on the above-mentioned film -- abbreviated -- with an exposure information memory measure which memorizes information from the above-mentioned imaging means to the same timing. A magnetic recording means which carries out magnetic recording of exposure information memorized by the above-mentioned exposure information memory measure at least and the corresponding address information to a magnetic recording part of the above-mentioned film was provided.
[0007]And this invention is characterized by that an image processing unit into which a picture printed after development using exposure information memorized by film which has a magnetic recording part is processed comprises the following in an image processing unit by the 2nd mode.
A displaying means which reads exposure information memorized by the above-mentioned film, and is displayed on a monitor.
An image processing means which processes picture information displayed on the above-mentioned displaying means.
A recording device which records processing existence information on whether it was processed by a described image processing means on a magnetic recording part of the above-mentioned unexposed film.
A processing information memory measure which memorizes image processing information at the time of being processed by a described image processing means.

[0008]Furthermore, this invention is characterized by that an image processing unit into which a picture printed after development using exposure information memorized by film which has a magnetic recording part is processed comprises the following with an image processing unit by the 3rd mode.
A displaying means which reads exposure information memorized by the above-mentioned film, and is displayed on a monitor.
An image processing means which processes picture information displayed on the above-mentioned displaying means.
A magnetic recording means which records image processing information processed by a described image processing means on a magnetic recording part of the above-mentioned unexposed film.

[0009]
[Function]namely, the light flux which carries out image formation of the light dividing means on a film plane in the camera by the 1st mode of this invention -- this image formation -- abbreviated -- it divides into the same image, and an imaging means picturizes the above-mentioned luminous flux splitting, in order to monitor an object image. and exposing an exposure information memory measure on the above-mentioned film -- abbreviated -- memorizing the information from the above-mentioned imaging means to the same timing, a magnetic recording means carries out magnetic recording of the exposure information memorized at least by the magnetic recording part of the above-mentioned film at the above-mentioned exposure information memory measure, and the corresponding address information.
[0010]And in the image processing unit by the 2nd mode. A displaying means reads the exposure information memorized by the film, and displays it on a monitor, An image processing means processes

the picture information displayed on the above-mentioned displaying means, a recording device records the processing existence information on whether it was processed by the described image processing means on the magnetic recording part of the above-mentioned unexposed film, and a processing information memory measure memorizes the image processing information at the time of being processed by a described image processing means.

[0011]In the image processing unit by the 3rd mode. A displaying means reads the exposure information memorized by the film, and displays it on a monitor, an image processing means processes the picture information displayed on the above-mentioned displaying means, and a magnetic recording means records the image processing information processed by the described image processing means on the magnetic recording part of the above-mentioned unexposed film.

[0012]

[Example]Hereafter, working example of this invention is described with reference to Drawings. Drawing 1 is a block diagram showing the composition of the camera of this invention. As shown in this drawing 1, on the optical path of object light, the diaphragm 3 and the half mirror 4 which carry out light volume regulation with zoom RENSU 1 and 2 of two groups which consist of lens groups of positive/negative are arranged, and the image formation lens 7 and the image sensor 8 are formed on the optical path of the light reflected by this half mirror 4. This diaphragm 3 is allocated among the above-mentioned zoom lenses 1 and 2. And image formation of the light flux reflected by the above-mentioned half mirror 4 is carried out on the image sensor 8 with the image formation lens 7.

[0013]On the other hand, on the optical path of the light which penetrated the above-mentioned half mirror 4, the focal plain type shutter 5 and the film 6 are arranged. Thus, the above-mentioned half mirror 4 penetrates the abbreviated half of the object light which entered to the film 6 side, and reflects other halves.

[0014]And the output of the above-mentioned image sensor 8 is connected to the input of the preamplifier 9, and the output of this preamplifier 9 is connected to the input of FM modulation circuit 12 via the luminance signal processing circuit 10 and the chrominance signal processing circuit 11. This preamplifier 9 amplifies the output of the image sensor 8, and the luminance-signal processing time 10 and the chrominance signal processing circuit 11 divide the output of this preamplifier 9 into a luminance signal and a chrominance signal, and output it. And FM modulation circuit 12 carries out FM modulation of these two signals, and compounds them.

[0015]The output of above-mentioned FM modulation circuit 12 is connected to the input of the monitor drive circuit 13, and the output of this monitor drive circuit 13 is connected to the input of the monitor 14. This monitor drive circuit 13 generates the signal for driving the monitor 14 based on the output signal of FM modulation circuit 12.

[0016]And the output of above-mentioned FM modulation circuit 12 is connected to the input of the graphical-data-compression circuit 16 via the A/D conversion circuit 15, the output of this graphical-data-compression circuit 16 is connected to the input of the memory driving circuit 17, and this memory driving circuit 17 is connected to the rewritable memory 18. This A/D conversion circuit 15 changes the output signal of FM modulation circuit 12 into a digital signal, the graphical-data-compression circuit 16 compresses this digital signal, the memory 18 is made to memorize this compressed digital signal, or the memory driving circuit 17 reads the data already memorized by this memory 18.

[0017]The output of the above-mentioned memory driving circuit 17 is connected also to the input of

the image restoration circuit 19, and the output of this image restoration circuit 19 is connected to the input of the monitor drive circuit 13 via the D/A conversion circuit 20. This image restoration circuit 19 restores the compressed picture which was memorized by the memory 18, and the D/A conversion circuit 20 changes that signal into an analog signal, and it outputs it to the monitor drive circuit 13.
[0018]The output of the above-mentioned luminance signal processing circuit 10 is connected also to the input of the AF arithmetic circuit 21, and the output of this AF arithmetic circuit 21 is connected to the input of the lens drive circuit 22. It is judged whether this AF arithmetic circuit 21 performs a contrast operation based on a luminance signal, and is focused. And the lens drive circuit 22 drives the lens 1 based on AF result of an operation of the AF arithmetic circuit 21. The lens position encoder 23 is connected to this lens 1.
The signal which shows how many lenses 1 moved this lens position encoder 23 to the lens drive circuit 22 is generated.

[0019]And the output of the film speed reading circuit 24 which reads the sensitivity information of a film cartridge is connected to the input of the AE arithmetic circuit 25. Based on a luminance signal and film speed, this AE arithmetic circuit 25 performs predetermined program operation, and calculates a diaphragm value and shutter speed.
[0020]The output of this AE arithmetic circuit 25 is connected to the input of the throttling control circuit 26 and the shutter control circuit 27. These throttling control crossroads 26 and the shutter control circuit 27 are extracted based on the output of the AE arithmetic circuit 25, and control 3 and the shutter 5.
[0021]The zooming drive circuit 28 to which the focal distance of a taking lens is changed is connected to the above-mentioned zoom lenses 1 and 2.
The zoom encoder 29 which detects the focal distance of the present taking lens is connected to this zooming drive circuit 28.
The output of this zoom encoder 29 is connected also to the input of the AE arithmetic circuit 25 and the AF arithmetic circuit 21.
[0022]And the release input part 30 which generates two signals based on forcing one's way with half press (1st release ON) of an unillustrated release button (2nd release ON), The zoom input part 31 for changing the focal distance of a taking lens is connected to the control section 34, The output of this control section 34 is connected to the input of the above-mentioned AE arithmetic circuit 25, the AF arithmetic circuit 21, the memory driving circuit 17, the monitor drive circuit 13, the shutter control circuit 27, the zooming drive circuit 28, the throttling control circuit 26, and the lens drive circuit 22. And this control section 24 controls operation of each part.
[0023]The magnetic recording circuit 32 for recording information required for the magnetic recording part provided in addition to the screen of this film 6 and the film feeding circuit 33 for winding up the film 6 are allocated near [film 6] the above.
[0024]Hereafter, operation of the camera of this invention is explained with reference to the flow chart of drawing 2. If the prescribed position of this camera is loaded with the new film 6 by (Step S1) and the user where the memory 18 is set to a camera (Step S2), the film feeding circuit 33 will operate by control of the control section 4, and the above-mentioned film 6 will be wound rapidly automatically (Step S3). In the meantime, a code number is recorded on the magnetic recording part of the film lead part which

is not illustrated [of the film 6] (step S4), and the information on the still more nearly same contents as this recorded information is recorded also on the memory 18 (Step S5).

[0025]Subsequently, the monitor 14 turns on and the check of an object image is attained on this monitor 14 (Step S6). Here, if a release button is half-pressed by the user and 1st release signal is outputted to the control section 34 by the release input part 30 (Step S7), the AF arithmetic circuit 21 will operate by control of this control section 34, and this AF arithmetic circuit 21 will generate a contrast signal (Step S8). When the pixel output of the i-th image sensor is set to Vi now, contrast signal deltaV is shown by the following formula.

[0026]

[Equation 1]

$$\Delta V = \sum_{i=1}^{n} | \Delta Vi+1 - \Delta Vi | \qquad \cdots (1)$$

[0027]The place which performed the operation based on the above-mentioned (1) formula at high speed and where ** deltaV became the maximum with ** turns into a place focused most, scanning the lens 1. This is a technique which is called what is called a "mountain-climbing method", and is used with VTR. If the place in which this deltaV is a peak is found, next, the control section 34 will calculate the average of the luminance signal of each pixel by the AE arithmetic circuit 25, will ask for photographic subject luminosity, will calculate it including film speed information, and will determine a diaphragm value and shutter speed (step S9-S12).

[0028]Subsequently, if a release button is pushed thoroughly and 2nd release signal is outputted from the release input part 30, The throttling control circuit 26 and the shutter control circuit 27 operate by control of the control section 34, Throttling control and shutter control are performed (Step S14, S15), After changing a picture signal when it can come, simultaneously the shutter 5 operates into a digital signal by the A/D conversion circuit 15 and compressing this digital signal by the graphical-data-compression circuit 16, it memorizes in the memory 18 via the memory driving circuit 17 (Step S16).

[0029]And after the image restoration circuit's 19 restoring the picture signal memorized by this memory 18 and changing into an analog signal by the D/A conversion circuit 20, it outputs to the monitor 14 via the monitor drive circuit 13, and Still Picture Sub-Division is displayed on the screen of the monitor 14 (Step S17). Thus, with the camera of this invention, a picture almost equivalent to the object image photoed by the film 6 is reproduced on the monitor 14. It is what did not understand what kind of photograph can be taken at the photography time, and it can check until it takes out to a lab and gains and sees a print conventionally.

[0030]Now, at the same time as the control section 34 displays Still Picture Sub-Division on the above-mentioned monitor 14, it starts the time check of a timer (Step S18), it operates the film feeding circuit 33, and winds up the film 6 by one piece (Step S19). The above-mentioned timer carries out whether a photographing scene is usually checked in about 5 seconds in the meantime, or it extends.

[0031]If this timer counts up (Step S20), the control section 34 will erase the Still Picture Sub-Division display on the monitor 14 (Step S24), and will display the object image at that time (animation) again on the monitor 14 (Step S25).

[0032]On the other hand, if 1st release signal is outputted from the release input part 30, without a timer counting up (Step S20, S21), The control section 34 erases the Still Picture Sub-Division display on

the monitor 14 (Step S22), displays the object image at that time (animation) again on the monitor 14 (Step S23), and returns to the processing after the above-mentioned step S8.

[0033]Next, drawing 3 is a block diagram showing the composition of the image processing unit of this invention. In drawing 3, if the memory driving circuit 41 reads the memory content of the memory 18, the picture information store circuit 42 will carry out the temporary storage of the memory content of this read memory 18, and the image restoration circuit 43 will restore the picture information stored in this picture information store circuit 42. And after this restored picture information is changed into an analog signal by the D/A conversion circuit 44, it is outputted to the monitor drive circuit 45, and is displayed on the monitor 46.

[0034]And if it is chosen what kind of image-processing mode is performed by the mode selection circuit 47 when processing a picture, This selection signal is inputted into the control circuit 64, this control circuit 64 chooses the bloodshot-eyes extracting circuit 48, the color correction circuit 50, the character generation circuit 51, the synthetic circuit 52, the exposure correction circuit 53, or a trimming circuit 54 based on this signal, and processing based on the various modes is performed.

[0035]In detail, when what is called "bloodshot-eyes phenomenon measure mode" at the time of stroboscope use is chosen, for example, the bloodshot-eyes extracting circuit 48 extracts a bloodshot-eyes field out of the picture information memorized by the memory 18, and processing for the bloodshot-eyes correction circuit 49 to remove the ingredient of the bloodshot eyes of this extracted field is performed.

[0036]In addition, the color correction circuit 50 performs processing for changing the color of a predetermined field or removing a shadow, and the character generation circuit 51 performs processing for superimposing a character in picture information. And the synthetic circuit 52 performs processing for compounding two or more photographs, the exposure correction circuit 53 performs processing for changing the luminosity of a predetermined field, and the trimming circuit 54 performs processing for printing only a predetermined field.

[0037]It is for the address input circuit 55 inputting the information on to which field on the screen displayed on the monitor 46 processing is performed when the mode of the above-mentioned circuits 48 thru/or 54 is chosen, and a mouse is usually used and the position is displayed on the monitor 46. And the address selection circuits 56 transmit the picture information of the address with which it was chosen for carrying out predetermined image processing only about the field specified in the above-mentioned address input circuit 55 to each circuits 48 thru/or 54.

[0038]The information inputting circuit 57 is a circuit for performing how many image processing or inputting the fixed-quantity value. The signal synthesizing circuit 58 compounds the picture signal of the predetermined field which carried out image processing, and the picture signal of the same field that is not processed. This output is inputted into the above-mentioned D/A conversion circuit 44, and the picture after processing is displayed on the monitor 46.

[0039]And the magnetic information read circuit 59 reads the magnetic information recorded on the magnetic recording part applied outside the screen of the film 6. And it is for the film feeding circuit 60 feeding with a film, and the film position encoder 61 generates a pulse with feed of the film 6. The magnetic recording circuit 62 is a circuit for recording magnetic information on the above-mentioned magnetic recording part. In addition, it is for the film memory correlation circuit 63 recording whether it is what was used when the film 6 and the memory 18 photoed the same scene, and the control circuit

64 controls operation of the whole image processing unit.
[0040]Hereafter, with reference to the flow chart of drawing 4 and drawing 5, operation of the image processing unit of this invention is explained. If the memory 18 which has memorized the picture at the time of the film (undeveloped negatives) 6 taken a photograph and photography is set in the image processing unit of this invention (Step S101, S102), The film feeding circuit 60 operates based on control of the control circuit 64, the film 6 is wound rapidly (Step S103), and the code recorded on the magnetic recording part of the film lead part which is not illustrated [of the film 6] is read by the magnetic information read circuit 59 in the meantime (Step S104).
[0041]Then, the memory driving circuit 41 reads the code memorized by the leading address of the memory 18 (Step 105), When judged with not agreeing with the code in which this code was read by the film memory correlation circuit 63 by the above-mentioned magnetic information read circuit 59, (Step S106) and an alarm display are performed (Step S107).
[0042]On the other hand, when having agreed, after storing "1" in the flag k which shows (Step S106) and the number of tops (Step S108), the picture information of eye one piece is read from the memory 18, and it once memorizes to the picture information store circuit 42 (Step S109). And after the image restoration circuit's 43 restoring this picture information (Step S111) and changing into an analog signal in a D/A conversion circuit (Step S112), a picture is displayed on the monitor 46 via the monitor drive circuit 45 (Step S113).
[0043]Subsequently, either of the circuits 48 thru/or 54 which the mode considered as a user's request by (Step S114) and the mode selection circuit 47 was chosen when a picture was processed (Step S115), and were chosen here operates (Step S116).
[0044]Then, if it inputs, using the mouse of the address input circuit 55 looking at the monitor 46 for the field which should process it (Step S117, S118) and the numerical value which shows how many image processing are performed is inputted by the information inputting circuit 57, It is inputted into either of the circuits 48 thru/or 54 where only the picture information of the address specified here processes predetermined picture information via the address selection circuits 56, and processing considered as a request by this circuit is performed (Steps S119-S121).
[0045]In this way, if processing is made, the information processed in the signal synthesizing circuit 58 and the information on the field which is not processed are compounded, it becomes the picture information for one top, and after D/A conversion is carried out, it will be displayed on the monitor 46 (step S122-124).
[0046]If the picture after the processing considers it as a user's request, the flag corresponding to **** (Step S125) and mode select will be set (Step S126). And when not correcting to others, the information after (Step S127) and image processing and the address information which shows to which field of a screen it corresponds are memorized by the memory 18 via the memory driving circuit 41 (Step S128).
[0047]And when the flag which shows that the above-mentioned processing was performed is set after feeding with a film one piece (Step S129), the information which starts the kind of processing by the magnetic recording circuit 62 is recorded on the magnetic recording part of a film (Step S130).
[0048]In this way, after clearing a flag (Step S131), when the flag which shows the number of pieces of a film is **********ed (Step S132) and the number of regulation tops is reached, it feeds with (Step S133) and the film 6, and all the processings are ended (Step S134).
[0049]At the above-mentioned step S125, when the picture after processing is not what is considered as

a user's request, or when the number of tops has not reached a prescribed number at the above-mentioned step S133, it shifts to the processing after the above-mentioned step S109. At the above-mentioned step S127, it shifts to the above-mentioned step S115 and the above-mentioned processing is performed to perform other processings. At the above-mentioned step S114, in not performing image processing, it shifts to the above-mentioned step S129, and performs the above-mentioned processing.
[0050]Next, drawing 6 is a block diagram showing the composition of the lab device of this invention. In drawing 6, it is the film to which processing which development ends the numerals 6 and is considered as a user's request with the above-mentioned image processing unit was performed, and the numerals 18 are memories the picture information and the above-mentioned processing information corresponding to the picture photoed by this film are remembered to be.
[0051]The magnetic information read circuit 71 is a circuit which reads the magnetic information of the film 6, and feed of the film 6 is performed by the feed circuit 83. The information read by this magnetic information read circuit 71 is sent to the processing piece correlation circuit 82 and the film memory correlation circuit 81. And it is compared whether the code of the film 6 and the code of the film memory correlation circuit 81 of the memory 18 correspond, or the top of the processing piece correlation circuit 82 of the film 6 and the memory 18 corresponds by comparing about the piece to process.
[0052]The scanner 72 detects the picture information of a film by a high resolution, and usually has resolution of about 18 million pixels by 2000-pixel x 3000 pixel x2 color. After the A/D conversion of the output signal of this scanner 72 is carried out by the A/D conversion circuit 73 and it is changed into a digital signal, it is memorized in the picture information record circuit 74.
[0053]The image processing information memorized by the memory 18 and its address information are read by the memory driving circuit 75, and this image processing information and address information are memorized in the processing information store circuit 76. And the processing information conversion circuit 77 changes the two above-mentioned information into the resolution levels of the scanner 72, and outputs it to the signal synthesizing circuit 78.
[0054]The signal synthesizing circuit 78 compounds the processed information and the information on the field which does not need to be processed, and the print section 79 creates the print 80 based on the final picture information created in the signal synthesizing circuit 78. The whole operation is controlled by the control circuit 84.
[0055]Although the image sensor currently used for the camera generally has a hundreds of thousands of pixels thing in use, since this picture information is memorized in the memory 18, it is possible to carry out based on this picture information, and to create a hard copy. It is also possible to process a picture, to carry out based on the picture after the processing, and to create a hard copy. However, the hard copy in which the image sensor was done since resolution was hundreds of thousands of pixels has bad image quality as mentioned above as compared with the print created from the silver halide film.
[0056]The lab device of this invention receives the memory 18 which memorized the information that it was a processing cause about information how much in which field on a negative, and also the picture information of the film 6 is read with the scanner 72, and the high-definition print which processes information with a resolution of 10 million pixels or more, and is considered as a request is obtained. The above-mentioned processing information conversion circuit 77 is a circuit which adjusts the address translation and processing information for it according to the resolution of the scanner of a lab.

[0057]Hereafter, operation of the lab device of this invention is explained with reference to the flow chart of drawing 7. If the memory 18 which has memorized the picture at the time of the film (undeveloped negatives) 6 taken a photograph and photography is set in the lab device of this invention (Step S201, S202), The film feeding circuit 83 operates based on control of the control circuit 84, the film 6 is wound rapidly (Step S203), and the code recorded on the magnetic recording part of the film lead part which is not illustrated [of the film 6] is read by the magnetic information read circuit 71 in the meantime (Step S204).
[0058]Then, the memory driving circuit 75 reads the code memorized by the leading address of the memory 18 (Step 205), When judged with not agreeing with the code in which this code was read by the film memory correlation circuit 81 by the above-mentioned magnetic information read circuit 71, (Step S206) and an alarm display are performed (Step S207).
[0059]On the other hand, when having agreed, after storing "1" in the flag k which shows (Step S206) and the number of tops (Step S208), One piece part feed of the film is carried out (Step S209), and after scanning one screen with the image scanner 72 and changing picture information into a digital signal by the A/D conversion circuit 73, it memorizes to the picture information store circuit 74 (Step S210, S211).
[0060]When the magnetic recording part of the film 6 has processing information, (Step S212), The processing information and the address in the memory 18 are read (Step S213), It is compounded with the information which memorizes in the processing information store circuit 76 (Step S214), and an address and processing contents to be processed are changed by the processing information conversion circuit 77, and does not need to be processed in the signal synthesizing circuit 78 (Step S215).
[0061]In this way, a high-definition print is created by the print section 79 (Step S216), The flag k which shows the number of pieces of the film 6 is **********ed (Step S217), when the number of pieces has reached the prescribed number, the film 6 is rewound (Step S219), the memory 18, the film 6, and a print paper are enclosed (Step S220), and all the operations are ended. At the above-mentioned step S218, when the number of pieces has not reached a prescribed number, it shifts to the above-mentioned step S209, and the above-mentioned processing is repeated.
[0062]Next, drawing 8 is a block diagram showing the composition of the example of improvement of the image processing unit of this invention. The same number is given to the component of the image processing unit shown previously and an identical content, and it explains below. Although the memory 18 had to be made to have had to memorize the address information and image processing information which need image processing and the lab device side had to be presented together with the undeveloped film in the image processing unit shown previously, In this example of improvement, the two above-mentioned information can be compounded and compressed and it can record on the magnetic recording part of the film 6 by high density as an analog signal. And in the lab device side, the information is read and the same processing treatment as the above-mentioned is performed.
[0063]In this drawing 8, the numerals 91 are the synthetic circuits for compounding address information and processing information, it is a compression circuit compressed in order that the numerals 92 may reduce that amount of signal data, and the numerals 93 are D/A conversion circuits. The output of this D/A conversion circuit 93 is recorded on the magnetic recording part of a film via the magnetic recording circuit 62.
[0064]Hereafter, with reference to the flow chart of drawing 9, operation of the image processing unit concerning this example of improvement is explained. When it specifies that it does not make other

corrections in Step S324 in this sequence, The synthetic circuit 91 compounds an address signal and a processing information signal (Step S325), After the compression circuit 92 compresses this data (Step S326) and the D/A conversion circuit 93 carries out D/A conversion (Step S327), the magnetic recording circuit 62 records the information on the magnetic recording part of the film 6 (Step S328). Since other sequences are the same as the sequence of the image processing unit shown previously, explanation is omitted here.

[0065]Next, drawing 10 is a block diagram showing the composition of the example of improvement of the lab device of this invention. If the magnetic information by which high density recording was carried out is read by the magnetic information read circuit 71 in this example of improvement, After the output signal is amplified by the preamplifier 101, it is changed into a digital signal in the A/D conversion circuit 102, It is restored to the original information in the restoration circuit 103, separates into address information and processing information in the separation circuits 104, and memorizes in the address selection store circuit 105 and the processing information store circuit 106, respectively.

[0066]And this memorized information is outputted to the address selection conversion circuit 107 and the processing information conversion circuit 108, respectively, it is changed so that it can respond to high-resolution information here, is compounded with the information on the original image scanner, and is stored [at the signal synthesizing circuit 78] temporarily in the signal store circuit 108. This memory information is outputted to the print section 79, and the print 80 of optical image quality is obtained.

[0067]Next, drawing 11 is a block lineblock diagram of the 1st example of improvement that constituted in one the camera and image processing unit of this invention which were explained previously. Since it is the same as that of operation of the camera and image processing unit which were mentioned above about operation, explanation is omitted here. In this drawing 11, an image-processing circuit is equivalent to the above-mentioned circuits 48 thru/or 54. According to this example of improvement, a picture can be processed, without using a special image processing unit.

[0068]Next, drawing 12 is a block lineblock diagram of the 2nd example of improvement that constituted in one the camera and image processing unit of this invention which were explained previously. Before taking out the device explained previously to the lab side using an undeveloped film, it was performing image processing, but it performs image processing in this example of improvement using the film developed negatives. That is, it lets out to the lens 1 and a re-near in order to equip a camera with the lens 111 for close-up photography and to carry out image formation of the picture of the negative film 6 developed negatives to the image sensor 8.

[0069]After the output signal of the image sensor 8 is amplified by the preamplifier 9, via the luminance signal processing circuit 10, the chrominance signal processing circuit 11, and FM modulation circuit 12, After being inputted into the A/D conversion circuit 112 by the side of the image processing unit connected with the camera in code and being changed into a digital signal here, graphical data compression is carried out in the graphical-data-compression circuit 113, and it memorizes in the store circuit 114. Then, it is restored to the original picture in the image restoration circuit 43, and is reversed in the NEGAPOJI inverting circuit 115. When a positive film is used, necessity does not have this processing. And after being changed into an analog signal in the D/A conversion circuit 44, it is outputted to the monitor 46 via the monitor drive circuit 45, and a picture is displayed.

[0070]Then, the same image-processing processing as the image processing unit shown previously is

performed, the information with which a lab device should be provided from address selection information and image processing information in the memory-signals creation circuit 116 is created, and this information is transmitted to the memory driving circuit 17 by the side of a camera, and is memorized by the memory 18. If print creation submits the memory 18 for the developed film 6 to a lab, a high-definition print will be obtained by performing the same lab processing as the above-mentioned.
[0071]There is an advantage of this example of improvement in the ability to perform image processing, even when the memory 18 used at the time of photography is lost or a memory content is eliminated.
As explained in full detail above, while a user looks at the display of a monitor, with the camera and image processing unit of this invention, image processing of the film taken a photograph can be performed.
[0072]In the lab device side which creates image processing information using a hundreds of thousands of pixels image sensor, since image processing is carried out after digitizing the picture of a negative film with resolution of 10 million pixels or more, the print after created processing serves as high definition.
[0073]According to the above-mentioned embodiment, the following composition is obtained.
(1) In [monitor a photographic subject by an electronic view finder, and] the camera which can be exposed on a film with a magnetic recording part this monitor image, the imaging means which outputs the signal for copying out an object image in the above-mentioned electronic view finder, and exposing on the above-mentioned film -- abbreviated -- to the same timing. The exposure information memory measure which memorizes the information from the above-mentioned imaging means, and the magnetic recording means which carries out magnetic recording of the exposure information memorized by the above-mentioned exposure information memory measure at least and the corresponding address information to the magnetic recording part of the above-mentioned film, The camera possessing a read-out means to read the exposure information memorized by the above-mentioned exposure information memory measure, and to display in the above-mentioned electronic view finder, and the picture information processing means which processes the picture information by which read-out was carried out [above-mentioned], and makes the above-mentioned exposure information memory measure restore the this processed picture.
(2) In the lab device printed using the exposure information memorized by the developing film used for the camera of the above-mentioned (1) description, and the above-mentioned exposure information memory measure, The reading means which reads the above-mentioned exposure information and corresponding address information in the magnetic recording part of the above-mentioned film, The exposure information reading means which reads the exposure information memorized by the above-mentioned exposure information memory measure or processing exposure information based on the above-mentioned reading means, The image scanner means which reads picture information from the above-mentioned developing film based on the above-mentioned reading means, A lab device possessing an image restoration means to correct the scanner information read by the above-mentioned image scanner means based on the information on the above-mentioned exposure information reading means, and the print means printed based on the output of a described image correcting means.
(3) the 1st picture information or it which was recorded on the silver halide film -- abbreviated -- with the memory measure which memorizes the 2nd equivalent picture information. The processing means which processes the 1st or the 2nd picture information memorized by the above-mentioned memory

measure, and creates the 3rd picture information, Process the 1st picture information recorded on the above-mentioned silver halide film, and the 3rd picture information created by the above-mentioned processing means, and the 4th picture information is created, The image-processing system possessing the control means which memorizes the 3rd picture of the above to the above-mentioned memory measure at least in order to create a print from this 4th picture information.
(4) the 1st picture information recorded on the silver halide film -- abbreviated -- with the memory measure which memorizes the 2nd equivalent picture information. The processing means which processes the 2nd picture information memorized by the above-mentioned memory measure, and creates the 3rd picture information, Process the 1st picture information recorded on the above-mentioned silver halide film, and the 3rd picture information created by the above-mentioned processing means, and the 4th picture information is created, The image-processing system possessing the control means which memorizes the 3rd picture information of the above to the above-mentioned memory measure in order to create a print from this 4th picture information.
(5) The memory measure which memorizes the 1st picture information recorded on the silver halide film, The processing means which processes the 1st picture information memorized by the above-mentioned memory measure, and creates the 3rd picture information, Process the 1st picture information recorded on the above-mentioned silver halide film, and the 3rd picture information created by the above-mentioned processing means, and the 4th picture information is created, The image-processing system possessing the control means which memorizes the 3rd picture of the above to the above-mentioned memory measure at least in order to create a print from this 4th picture information.
(6) the photographing optical system which records the 1st picture information on a silver halide film, and the title 1 above-mentioned picture information -- abbreviated -- with the image sensor for creating the 2nd equivalent picture information. The memory measure which memorizes the optical system for a monitor for making the above-mentioned image sensor create the 2nd picture information, and the 2nd picture information created by the above-mentioned image sensor, The processing means which processes the 2nd picture information memorized by the above-mentioned memory measure, and creates the 3rd picture information, Process the 1st picture information recorded on the above-mentioned silver halide film, and the 3rd picture information created by the above-mentioned processing means, and the 4th picture information is created, The image-processing system possessing the control means which memorizes the 3rd picture information of the above to the above-mentioned memory measure in order to create a print from this 4th picture information.
(7) the photographing optical system which records the 1st picture information on a silver halide film, and the title 1 above-mentioned picture information -- abbreviated -- with the image sensor for creating the 2nd equivalent picture information. The memory measure which memorizes the optical system for a monitor for making the above-mentioned image sensor create the 2nd picture information, and the 2nd picture information created by the above-mentioned image sensor, The mode selection means what kind of processing when processing the 2nd picture information memorized by the above-mentioned memory measure, is performed, and for choosing, The addressing means to which field processing with the above-mentioned selected mode selection means is performed, and for specifying, The processing means for processing the 2nd picture information memorized by the above-mentioned memory measure, the output of the above-mentioned mode selection means, and the output of the above-

mentioned addressing means, and creating the 3rd picture information, Process the 1st picture information recorded on the above-mentioned silver halide film, and the 3rd picture information created by the above-mentioned processing means, and the 4th picture information is created, The image-processing system possessing the control means which memorizes the 3rd picture of the above to the above-mentioned memory measure at least in order to create a print from this 4th picture information.

(8) the photographing optical system which records the 1st picture information on a silver halide film, and the title 1 above-mentioned picture information -- abbreviated -- with the image sensor for creating the 2nd equivalent picture information. The memory measure which memorizes the optical system for a monitor for making the above-mentioned image sensor create the 2nd picture information, and the 2nd picture information created by the above-mentioned image sensor, The mode selection means what kind of processing when processing the 2nd picture information memorized by the above-mentioned memory measure, is performed, and for choosing, The addressing means to which field processing with the above-mentioned selected mode selection means is performed, and for specifying, The information setting means how many processings with the above-mentioned selected mode selection means are performed, and for determining, The processing means which processes the 2nd picture information memorized by the above-mentioned memory measure, the output of the above-mentioned mode selection means, the output of the above-mentioned addressing means, and the output of the above-mentioned information setting means, and creates the 3rd picture information, Process the 1st picture information recorded on the above-mentioned silver halide film, and the 3rd picture information created by the above-mentioned processing means, and the 4th picture information is created, The image-processing system possessing the control means which memorizes the 3rd picture of the above to the above-mentioned memory measure at least in order to create a print from this 4th picture information.

(9) the photographing optical system which records the 1st picture information on a silver halide film, and the title 1 above-mentioned picture information -- abbreviated -- with the image sensor for creating the 2nd equivalent picture information. The memory measure which memorizes the optical system for a monitor for making the above-mentioned image sensor create the 2nd picture information, and the 2nd picture information created by the above-mentioned image sensor, The processing means which processes the 2nd picture information memorized by the above-mentioned memory measure, and creates the 3rd picture information, Process the 1st picture information recorded on the above-mentioned silver halide film, and the 3rd picture information created by the above-mentioned processing means, and the 4th picture information is created, The image-processing system possessing the control means for recording the 3rd picture information of the above on the magnetic recording layer in which it was provided by the above-mentioned silver halide film, in order to create a print from this 4th picture information.

(10) the photographing optical system which records the 1st picture information on a silver halide film, and the title 1 above-mentioned picture information -- abbreviated -- with the image sensor for creating the 2nd equivalent picture information. The memory measure which memorizes the optical system for a monitor for making the above-mentioned image sensor create the 2nd picture information, and the 2nd picture information created by the above-mentioned image sensor, The mode selection means what kind of processing when processing the 2nd picture information memorized by the above-mentioned

memory measure, is performed, and for choosing, The addressing means to which field processing with the above-mentioned selected mode selection means is performed, and for specifying, The information setting means how many processings with the above-mentioned selected mode selection means are performed, and for determining, Process the 1st picture information recorded on the above-mentioned silver halide film, and the 3rd picture information created by the above-mentioned processing means, and the 4th picture information is created, The camera with an image-processing function possessing the control means which memorizes described image information to the above-mentioned memory measure in order to create a print from this 4th picture information.
(11) The memory measure which memorizes the 1st picture information recorded on the silver halide film, The processing means which processes the 1st picture information memorized by the above-mentioned memory measure, and creates the 3rd picture information, What kind of processing when processing the 1st picture information memorized by the above-mentioned memory measure, is performed, and the mode selection means to choose, The addressing means to which field processing with the above-mentioned selected mode selection means is performed, and for specifying, The information setting means how many processings with the above-mentioned selected mode selection means are performed, and for determining, The processing means which processes the 1st picture information memorized by the above-mentioned memory measure, the output of the above-mentioned mode selection means, the output of the above-mentioned addressing means, and the output of the above-mentioned information setting means, and creates the 3rd picture information, Process the 1st picture information recorded on the above-mentioned silver halide film, and the 3rd picture information created by the above-mentioned processing means, and the 4th picture information is created, The image-processing system possessing the control means which memorizes the 3rd picture of the above to the above-mentioned memory measure at least in order to create a print from this 4th picture information.
[0074]
[Effect of the Invention]According to this invention, before simultaneous printing is carried out, the information which should be corrected by the picture of the film taken a photograph can be clarified, and the camera and image processing unit which obtain the print which correction which a photography person makes on a request based on this information accomplished can be provided.

TECHNICAL FIELD

[Industrial Application]This invention relates to the image processing unit which processes it into the picture concerning the object image which was photoed with the camera which photos an object image using a silver halide film, and this camera, and which was carried out.

PRIOR ART

[Description of the Prior Art]The art of providing printing [which a user wishes] is proposed by providing a magnetic recording part outside the screen of a silver halide film, and recording print number of sheets, trimming information, exposure correction information, etc. on this magnetic recording part conventionally (example 1 of precedence).
[0003]A silver halide film is scanned with an image scanner, image data is downloaded to a computer, this image data is processed arbitrarily, and the art which outputs a print via a hard printer is proposed (example 2 of precedence).

EFFECT OF THE INVENTION

[Effect of the Invention]According to this invention, before simultaneous printing is carried out, the information which should be corrected by the picture of the film taken a photograph can be clarified, and the camera and image processing unit which obtain the print which correction which a photography person makes on a request based on this information accomplished can be provided.

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention]However, since the art concerning the above-mentioned example 1 of precedence was using ready-made language laboratory system as the base, the processible range was restricted to exposure correction and trimming. In the art concerning the above-mentioned example 2 of precedence, since equipment of an image scanner, a printer, etc. was expensive, in order to go to a service station etc. in order to use this equipment, and also to incorporate image data, the film developed negatives had to be prepared.
[0005]Before simultaneous printing is carried out, the place which this invention was made in light of the above-mentioned problems, and is made into the purpose clarifies the information which should be corrected by the picture of the film taken a photograph, and there is in obtaining the print which correction which a photography person makes on a request based on this information accomplished.

MEANS

[Means for Solving the Problem]To achieve the above objects, in a camera by the 1st mode of this invention. In [monitor an object image by an electronic view finder, and] a camera which

can be exposed on a film with a magnetic recording part this monitor image, light flux which carries out image formation on the above-mentioned film plane -- this image formation -- abbreviated -- with a light dividing means divided into the same image. An imaging means which picturizes the above-mentioned luminous flux splitting in order to monitor the above-mentioned object image, exposing on the above-mentioned film -- abbreviated -- with an exposure information memory measure which memorizes information from the above-mentioned imaging means to the same timing. A magnetic recording means which carries out magnetic recording of exposure information memorized by the above-mentioned exposure information memory measure at least and the corresponding address information to a magnetic recording part of the above-mentioned film was provided.

[0007]And this invention is characterized by that an image processing unit into which a picture printed after development using exposure information memorized by film which has a magnetic recording part is processed comprises the following in an image processing unit by the 2nd mode.

A displaying means which reads exposure information memorized by the above-mentioned film, and is displayed on a monitor.

An image processing means which processes picture information displayed on the above-mentioned displaying means.

A recording device which records processing existence information on whether it was processed by a described image processing means on a magnetic recording part of the above-mentioned unexposed film.

A processing information memory measure which memorizes image processing information at the time of being processed by a described image processing means.

[0008]Furthermore, this invention is characterized by that an image processing unit into which a picture printed after development using exposure information memorized by film which has a magnetic recording part is processed comprises the following with an image processing unit by the 3rd mode.

A displaying means which reads exposure information memorized by the above-mentioned film, and is displayed on a monitor.

An image processing means which processes picture information displayed on the above-mentioned displaying means.

A magnetic recording means which records image processing information processed by a described image processing means on a magnetic recording part of the above-mentioned unexposed film.

OPERATION

[Function]namely, the light flux which carries out image formation of the light dividing means on a film plane in the camera by the 1st mode of this invention -- this image formation -- abbreviated -- it divides into the same image, and an imaging means picturizes the above-mentioned luminous flux splitting, in order to monitor an object image. and exposing an exposure information memory measure on the above-mentioned film -- abbreviated -- memorizing the information from the above-mentioned imaging means to the same timing, a magnetic recording means carries out magnetic recording of the exposure information memorized at least by the magnetic recording part of the above-mentioned film at the above-mentioned exposure information memory measure, and the corresponding address information.
[0010]And in the image processing unit by the 2nd mode. A displaying means reads the exposure information memorized by the film, and displays it on a monitor, An image processing means processes the picture information displayed on the above-mentioned displaying means, a recording device records the processing existence information on whether it was processed by the described image processing means on the magnetic recording part of the above-mentioned unexposed film, and a processing information memory measure memorizes the image processing information at the time of being processed by a described image processing means.
[0011]In the image processing unit by the 3rd mode. A displaying means reads the exposure information memorized by the film, and displays it on a monitor, an image processing means processes the picture information displayed on the above-mentioned displaying means, and a magnetic recording means records the image processing information processed by the described image processing means on the magnetic recording part of the above-mentioned unexposed film.

EXAMPLE

[Example]Hereafter, working example of this invention is described with reference to Drawings. Drawing 1 is a block diagram showing the composition of the camera of this invention. As shown in this drawing 1, on the optical path of object light, the diaphragm 3 and the half mirror 4 which carry out light volume regulation with zoom RENSU 1 and 2 of two groups which consist of lens groups of positive/negative are arranged, and the image formation lens 7 and the image sensor 8 are formed on the optical path of the light reflected by this half mirror 4. This diaphragm 3 is allocated among the above-mentioned zoom lenses 1 and 2. And image formation of the light flux reflected by the above-mentioned half mirror 4 is carried out on the image sensor 8 with the image formation lens 7.
[0013]On the other hand, on the optical path of the light which penetrated the above-mentioned half mirror 4, the focal plain type shutter 5 and the film 6 are arranged. Thus, the above-mentioned half mirror 4 penetrates the abbreviated half of the object light which entered to the film 6 side, and reflects

other halves.
[0014]And the output of the above-mentioned image sensor 8 is connected to the input of the preamplifier 9, and the output of this preamplifier 9 is connected to the input of FM modulation circuit 12 via the luminance signal processing circuit 10 and the chrominance signal processing circuit 11. This preamplifier 9 amplifies the output of the image sensor 8, and the luminance-signal processing time 10 and the chrominance signal processing circuit 11 divide the output of this preamplifier 9 into a luminance signal and a chrominance signal, and output it. And FM modulation circuit 12 carries out FM modulation of these two signals, and compounds them.
[0015]The output of above-mentioned FM modulation circuit 12 is connected to the input of the monitor drive circuit 13, and the output of this monitor drive circuit 13 is connected to the input of the monitor 14. This monitor drive circuit 13 generates the signal for driving the monitor 14 based on the output signal of FM modulation circuit 12.
[0016]And the output of above-mentioned FM modulation circuit 12 is connected to the input of the graphical-data-compression circuit 16 via the A/D conversion circuit 15, the output of this graphical-data-compression circuit 16 is connected to the input of the memory driving circuit 17, and this memory driving circuit 17 is connected to the rewritable memory 18. This A/D conversion circuit 15 changes the output signal of FM modulation circuit 12 into a digital signal, the graphical-data-compression circuit 16 compresses this digital signal, the memory 18 is made to memorize this compressed digital signal, or the memory driving circuit 17 reads the data already memorized by this memory 18.
[0017]The output of the above-mentioned memory driving circuit 17 is connected also to the input of the image restoration circuit 19, and the output of this image restoration circuit 19 is connected to the input of the monitor drive circuit 13 via the D/A conversion circuit 20. This image restoration circuit 19 restores the compressed picture which was memorized by the memory 18, and the D/A conversion circuit 20 changes that signal into an analog signal, and it outputs it to the monitor drive circuit 13.
[0018]The output of the above-mentioned luminance signal processing circuit 10 is connected also to the input of the AF arithmetic circuit 21, and the output of this AF arithmetic circuit 21 is connected to the input of the lens drive circuit 22. It is judged whether this AF arithmetic circuit 21 performs a contrast operation based on a luminance signal, and is focused. And the lens drive circuit 22 drives the lens 1 based on AF result of an operation of the AF arithmetic circuit 21. The lens position encoder 23 is connected to this lens 1.
The signal which shows how many lenses 1 moved this lens position encoder 23 to the lens drive circuit 22 is generated.

[0019]And the output of the film speed reading circuit 24 which reads the sensitivity information of a film cartridge is connected to the input of the AE arithmetic circuit 25. Based on a luminance signal and film speed, this AE arithmetic circuit 25 performs predetermined program operation, and calculates a diaphragm value and shutter speed.
[0020]The output of this AE arithmetic circuit 25 is connected to the input of the throttling control circuit 26 and the shutter control circuit 27. These throttling control crossroads 26 and the shutter control circuit 27 are extracted based on the output of the AE arithmetic circuit 25, and control 3 and the shutter 5.
[0021]The zooming drive circuit 28 to which the focal distance of a taking lens is changed is connected

to the above-mentioned zoom lenses 1 and 2.
The zoom encoder 29 which detects the focal distance of the present taking lens is connected to this zooming drive circuit 28.
The output of this zoom encoder 29 is connected also to the input of the AE arithmetic circuit 25 and the AF arithmetic circuit 21.
[0022]And the release input part 30 which generates two signals based on forcing one's way with half press (1st release ON) of an unillustrated release button (2nd release ON), The zoom input part 31 for changing the focal distance of a taking lens is connected to the control section 34, The output of this control section 34 is connected to the input of the above-mentioned AE arithmetic circuit 25, the AF arithmetic circuit 21, the memory driving circuit 17, the monitor drive circuit 13, the shutter control circuit 27, the zooming drive circuit 28, the throttling control circuit 26, and the lens drive circuit 22. And this control section 24 controls operation of each part.
[0023]The magnetic recording circuit 32 for recording information required for the magnetic recording part provided in addition to the screen of this film 6 and the film feeding circuit 33 for winding up the film 6 are allocated near [film 6] the above.
[0024]Hereafter, operation of the camera of this invention is explained with reference to the flow chart of drawing 2. If the prescribed position of this camera is loaded with the new film 6 by (Step S1) and the user where the memory 18 is set to a camera (Step S2), the film feeding circuit 33 will operate by control of the control section 4, and the above-mentioned film 6 will be wound rapidly automatically (Step S3). In the meantime, a code number is recorded on the magnetic recording part of the film lead part which is not illustrated [of the film 6] (step S4), and the information on the still more nearly same contents as this recorded information is recorded also on the memory 18 (Step S5).
[0025]Subsequently, the monitor 14 turns on and the check of an object image is attained on this monitor 14 (Step S6). Here, if a release button is half-pressed by the user and 1st release signal is outputted to the control section 34 by the release input part 30 (Step S7), the AF arithmetic circuit 21 will operate by control of this control section 34, and this AF arithmetic circuit 21 will generate a contrast signal (Step S8). When the pixel output of the i-th image sensor is set to Vi now, contrast signal deltaV is shown by the following formula.
[0026]
[Equation 1]

$$\Delta V = \sum_{i=1}^{n} | \Delta Vi+1 - \Delta Vi | \qquad \cdots (1)$$

[0027]The place which performed the operation based on the above-mentioned (1) formula at high speed and where ** deltaV became the maximum with ** turns into a place focused most, scanning the lens 1. This is a technique which is called what is called a "mountain-climbing method", and is used with VTR. If the place in which this deltaV is a peak is found, next, the control section 34 will calculate the average of the luminance signal of each pixel by the AE arithmetic circuit 25, will ask for photographic subject luminosity, will calculate it including film speed information, and will determine a diaphragm value and shutter speed (step S9-S12).
[0028]Subsequently, if a release button is pushed thoroughly and 2nd release signal is outputted from the release input part 30, The throttling control circuit 26 and the shutter control circuit 27 operate by

control of the control section 34, Throttling control and shutter control are performed (Step S14, S15), After changing a picture signal when it can come, simultaneously the shutter 5 operates into a digital signal by the A/D conversion circuit 15 and compressing this digital signal by the graphical-data-compression circuit 16, it memorizes in the memory 18 via the memory driving circuit 17 (Step S16).
[0029]And after the image restoration circuit's 19 restoring the picture signal memorized by this memory 18 and changing into an analog signal by the D/A conversion circuit 20, it outputs to the monitor 14 via the monitor drive circuit 13, and Still Picture Sub-Division is displayed on the screen of the monitor 14 (Step S17). Thus, with the camera of this invention, a picture almost equivalent to the object image photoed by the film 6 is reproduced on the monitor 14. It is what did not understand what kind of photograph can be taken at the photography time, and it can check until it takes out to a lab and gains and sees a print conventionally.
[0030]Now, at the same time as the control section 34 displays Still Picture Sub-Division on the above-mentioned monitor 14, it starts the time check of a timer (Step S18), it operates the film feeding circuit 33, and winds up the film 6 by one piece (Step S19). The above-mentioned timer carries out whether a photographing scene is usually checked in about 5 seconds in the meantime, or it extends.
[0031]If this timer counts up (Step S20), the control section 34 will erase the Still Picture Sub-Division display on the monitor 14 (Step S24), and will display the object image at that time (animation) again on the monitor 14 (Step S25).
[0032]On the other hand, if 1st release signal is outputted from the release input part 30, without a timer counting up (Step S20, S21), The control section 34 erases the Still Picture Sub-Division display on the monitor 14 (Step S22), displays the object image at that time (animation) again on the monitor 14 (Step S23), and returns to the processing after the above-mentioned step S8.
[0033]Next, drawing 3 is a block diagram showing the composition of the image processing unit of this invention. In drawing 3, if the memory driving circuit 41 reads the memory content of the memory 18, the picture information store circuit 42 will carry out the temporary storage of the memory content of this read memory 18, and the image restoration circuit 43 will restore the picture information stored in this picture information store circuit 42. And after this restored picture information is changed into an analog signal by the D/A conversion circuit 44, it is outputted to the monitor drive circuit 45, and is displayed on the monitor 46.
[0034]And if it is chosen what kind of image-processing mode is performed by the mode selection circuit 47 when processing a picture, This selection signal is inputted into the control circuit 64, this control circuit 64 chooses the bloodshot-eyes extracting circuit 48, the color correction circuit 50, the character generation circuit 51, the synthetic circuit 52, the exposure correction circuit 53, or a trimming circuit 54 based on this signal, and processing based on the various modes is performed.
[0035]In detail, when what is called "bloodshot-eyes phenomenon measure mode" at the time of stroboscope use is chosen, for example, the bloodshot-eyes extracting circuit 48 extracts a bloodshot-eyes field out of the picture information memorized by the memory 18, and processing for the bloodshot-eyes correction circuit 49 to remove the ingredient of the bloodshot eyes of this extracted field is performed.
[0036]In addition, the color correction circuit 50 performs processing for changing the color of a predetermined field or removing a shadow, and the character generation circuit 51 performs processing for superimposing a character in picture information. And the synthetic circuit 52 performs processing

for compounding two or more photographs, the exposure correction circuit 53 performs processing for changing the luminosity of a predetermined field, and the trimming circuit 54 performs processing for printing only a predetermined field.

[0037]It is for the address input circuit 55 inputting the information on to which field on the screen displayed on the monitor 46 processing is performed when the mode of the above-mentioned circuits 48 thru/or 54 is chosen, and a mouse is usually used and the position is displayed on the monitor 46. And the address selection circuits 56 transmit the picture information of the address with which it was chosen for carrying out predetermined image processing only about the field specified in the above-mentioned address input circuit 55 to each circuits 48 thru/or 54.

[0038]The information inputting circuit 57 is a circuit for performing how many image processing or inputting the fixed-quantity value. The signal synthesizing circuit 58 compounds the picture signal of the predetermined field which carried out image processing, and the picture signal of the same field that is not processed. This output is inputted into the above-mentioned D/A conversion circuit 44, and the picture after processing is displayed on the monitor 46.

[0039]And the magnetic information read circuit 59 reads the magnetic information recorded on the magnetic recording part applied outside the screen of the film 6. And it is for the film feeding circuit 60 feeding with a film, and the film position encoder 61 generates a pulse with feed of the film 6. The magnetic recording circuit 62 is a circuit for recording magnetic information on the above-mentioned magnetic recording part. In addition, it is for the film memory correlation circuit 63 recording whether it is what was used when the film 6 and the memory 18 photoed the same scene, and the control circuit 64 controls operation of the whole image processing unit.

[0040]Hereafter, with reference to the flow chart of drawing 4 and drawing 5, operation of the image processing unit of this invention is explained. If the memory 18 which has memorized the picture at the time of the film (undeveloped negatives) 6 taken a photograph and photography is set in the image processing unit of this invention (Step S101, S102), The film feeding circuit 60 operates based on control of the control circuit 64, the film 6 is wound rapidly (Step S103), and the code recorded on the magnetic recording part of the film lead part which is not illustrated [of the film 6] is read by the magnetic information read circuit 59 in the meantime (Step S104).

[0041]Then, the memory driving circuit 41 reads the code memorized by the leading address of the memory 18 (Step 105), When judged with not agreeing with the code in which this code was read by the film memory correlation circuit 63 by the above-mentioned magnetic information read circuit 59, (Step S106) and an alarm display are performed (Step S107).

[0042]On the other hand, when having agreed, after storing "1" in the flag k which shows (Step S106) and the number of tops (Step S108), the picture information of eye one piece is read from the memory 18, and it once memorizes to the picture information store circuit 42 (Step S109). And after the image restoration circuit's 43 restoring this picture information (Step S111) and changing into an analog signal in a D/A conversion circuit (Step S112), a picture is displayed on the monitor 46 via the monitor drive circuit 45 (Step S113).

[0043]Subsequently, either of the circuits 48 thru/or 54 which the mode considered as a user's request by (Step S114) and the mode selection circuit 47 was chosen when a picture was processed (Step S115), and were chosen here operates (Step S116).

[0044]Then, if it inputs, using the mouse of the address input circuit 55 looking at the monitor 46 for the

field which should process it (Step S117, S118) and the numerical value which shows how many image processing are performed is inputted by the information inputting circuit 57, It is inputted into either of the circuits 48 thru/or 54 where only the picture information of the address specified here processes predetermined picture information via the address selection circuits 56, and processing considered as a request by this circuit is performed (Steps S119-S121).

[0045]In this way, if processing is made, the information processed in the signal synthesizing circuit 58 and the information on the field which is not processed are compounded, it becomes the picture information for one top, and after D/A conversion is carried out, it will be displayed on the monitor 46 (step S122-124).

[0046]If the picture after the processing considers it as a user's request, the flag corresponding to **** (Step S125) and mode select will be set (Step S126). And when not correcting to others, the information after (Step S127) and image processing and the address information which shows to which field of a screen it corresponds are memorized by the memory 18 via the memory driving circuit 41 (Step S128).

[0047]And when the flag which shows that the above-mentioned processing was performed is set after feeding with a film one piece (Step S129), the information which starts the kind of processing by the magnetic recording circuit 62 is recorded on the magnetic recording part of a film (Step S130).

[0048]In this way, after clearing a flag (Step S131), when the flag which shows the number of pieces of a film is **********ed (Step S132) and the number of regulation tops is reached, it feeds with (Step S133) and the film 6, and all the processings are ended (Step S134).

[0049]At the above-mentioned step S125, when the picture after processing is not what is considered as a user's request, or when the number of tops has not reached a prescribed number at the above-mentioned step S133, it shifts to the processing after the above-mentioned step S109. At the above-mentioned step S127, it shifts to the above-mentioned step S115 and the above-mentioned processing is performed to perform other processings. At the above-mentioned step S114, in not performing image processing, it shifts to the above-mentioned step S129, and performs the above-mentioned processing.

[0050]Next, drawing 6 is a block diagram showing the composition of the lab device of this invention. In drawing 6, it is the film to which processing which development ends the numerals 6 and is considered as a user's request with the above-mentioned image processing unit was performed, and the numerals 18 are memories the picture information and the above-mentioned processing information corresponding to the picture photoed by this film are remembered to be.

[0051]The magnetic information read circuit 71 is a circuit which reads the magnetic information of the film 6, and feed of the film 6 is performed by the feed circuit 83. The information read by this magnetic information read circuit 71 is sent to the processing piece correlation circuit 82 and the film memory correlation circuit 81. And it is compared whether the code of the film 6 and the code of the film memory correlation circuit 81 of the memory 18 correspond, or the top of the processing piece correlation circuit 82 of the film 6 and the memory 18 corresponds by comparing about the piece to process.

[0052]The scanner 72 detects the picture information of a film by a high resolution, and usually has resolution of about 18 million pixels by 2000-pixel x 3000 pixel x2 color. After the A/D conversion of the output signal of this scanner 72 is carried out by the A/D conversion circuit 73 and it is changed into a digital signal, it is memorized in the picture information record circuit 74.

[0053]The image processing information memorized by the memory 18 and its address information are

read by the memory driving circuit 75, and this image processing information and address information are memorized in the processing information store circuit 76. And the processing information conversion circuit 77 changes the two above-mentioned information into the resolution levels of the scanner 72, and outputs it to the signal synthesizing circuit 78.
[0054]The signal synthesizing circuit 78 compounds the processed information and the information on the field which does not need to be processed, and the print section 79 creates the print 80 based on the final picture information created in the signal synthesizing circuit 78. The whole operation is controlled by the control circuit 84.
[0055]Although the image sensor currently used for the camera generally has a hundreds of thousands of pixels thing in use, since this picture information is memorized in the memory 18, it is possible to carry out based on this picture information, and to create a hard copy. It is also possible to process a picture, to carry out based on the picture after the processing, and to create a hard copy. However, the hard copy in which the image sensor was done since resolution was hundreds of thousands of pixels has bad image quality as mentioned above as compared with the print created from the silver halide film.
[0056]The lab device of this invention receives the memory 18 which memorized the information that it was a processing cause about information how much in which field on a negative, and also the picture information of the film 6 is read with the scanner 72, and the high-definition print which processes information with a resolution of 10 million pixels or more, and is considered as a request is obtained. The above-mentioned processing information conversion circuit 77 is a circuit which adjusts the address translation and processing information for it according to the resolution of the scanner of a lab.
[0057]Hereafter, operation of the lab device of this invention is explained with reference to the flow chart of drawing 7. If the memory 18 which has memorized the picture at the time of the film (undeveloped negatives) 6 taken a photograph and photography is set in the lab device of this invention (Step S201, S202), The film feeding circuit 83 operates based on control of the control circuit 84, the film 6 is wound rapidly (Step S203), and the code recorded on the magnetic recording part of the film lead part which is not illustrated [of the film 6] is read by the magnetic information read circuit 71 in the meantime (Step S204).
[0058]Then, the memory driving circuit 75 reads the code memorized by the leading address of the memory 18 (Step 205), When judged with not agreeing with the code in which this code was read by the film memory correlation circuit 81 by the above-mentioned magnetic information read circuit 71, (Step S206) and an alarm display are performed (Step S207).
[0059]On the other hand, when having agreed, after storing "1" in the flag k which shows (Step S206) and the number of tops (Step S208), One piece part feed of the film is carried out (Step S209), and after scanning one screen with the image scanner 72 and changing picture information into a digital signal by the A/D conversion circuit 73, it memorizes to the picture information store circuit 74 (Step S210, S211).
[0060]When the magnetic recording part of the film 6 has processing information, (Step S212), The processing information and the address in the memory 18 are read (Step S213), It is compounded with the information which memorizes in the processing information store circuit 76 (Step S214), and an address and processing contents to be processed are changed by the processing information conversion circuit 77, and does not need to be processed in the signal synthesizing circuit 78 (Step S215).
[0061]In this way, a high-definition print is created by the print section 79 (Step S216), The flag k which shows the number of pieces of the film 6 is **********ed (Step S217), when the number of pieces

has reached the prescribed number, the film 6 is rewound (Step S219), the memory 18, the film 6, and a print paper are enclosed (Step S220), and all the operations are ended. At the above-mentioned step S218, when the number of pieces has not reached a prescribed number, it shifts to the above-mentioned step S209, and the above-mentioned processing is repeated.

[0062]Next, drawing 8 is a block diagram showing the composition of the example of improvement of the image processing unit of this invention. The same number is given to the component of the image processing unit shown previously and an identical content, and it explains below. Although the memory 18 had to be made to have had to memorize the address information and image processing information which need image processing and the lab device side had to be presented together with the undeveloped film in the image processing unit shown previously, In this example of improvement, the two above-mentioned information can be compounded and compressed and it can record on the magnetic recording part of the film 6 by high density as an analog signal. And in the lab device side, the information is read and the same processing treatment as the above-mentioned is performed.

[0063]In this drawing 8, the numerals 91 are the synthetic circuits for compounding address information and processing information, it is a compression circuit compressed in order that the numerals 92 may reduce that amount of signal data, and the numerals 93 are D/A conversion circuits. The output of this D/A conversion circuit 93 is recorded on the magnetic recording part of a film via the magnetic recording circuit 62.

[0064]Hereafter, with reference to the flow chart of drawing 9, operation of the image processing unit concerning this example of improvement is explained. When it specifies that it does not make other corrections in Step S324 in this sequence, The synthetic circuit 91 compounds an address signal and a processing information signal (Step S325), After the compression circuit 92 compresses this data (Step S326) and the D/A conversion circuit 93 carries out D/A conversion (Step S327), the magnetic recording circuit 62 records the information on the magnetic recording part of the film 6 (Step S328). Since other sequences are the same as the sequence of the image processing unit shown previously, explanation is omitted here.

[0065]Next, drawing 10 is a block diagram showing the composition of the example of improvement of the lab device of this invention. If the magnetic information by which high density recording was carried out is read by the magnetic information read circuit 71 in this example of improvement, After the output signal is amplified by the preamplifier 101, it is changed into a digital signal in the A/D conversion circuit 102, It is restored to the original information in the restoration circuit 103, separates into address information and processing information in the separation circuits 104, and memorizes in the address selection store circuit 105 and the processing information store circuit 106, respectively.

[0066]And this memorized information is outputted to the address selection conversion circuit 107 and the processing information conversion circuit 108, respectively, it is changed so that it can respond to high-resolution information here, is compounded with the information on the original image scanner, and is stored [at the signal synthesizing circuit 78] temporarily in the signal store circuit 108. This memory information is outputted to the print section 79, and the print 80 of optical image quality is obtained.

[0067]Next, drawing 11 is a block lineblock diagram of the 1st example of improvement that constituted in one the camera and image processing unit of this invention which were explained previously. Since it is the same as that of operation of the camera and image processing unit which were mentioned above

about operation, explanation is omitted here. In this drawing 11, an image-processing circuit is equivalent to the above-mentioned circuits 48 thru/or 54. According to this example of improvement, a picture can be processed, without using a special image processing unit.

[0068]Next, drawing 12 is a block lineblock diagram of the 2nd example of improvement that constituted in one the camera and image processing unit of this invention which were explained previously. Before taking out the device explained previously to the lab side using an undeveloped film, it was performing image processing, but it performs image processing in this example of improvement using the film developed negatives. That is, it lets out to the lens 1 and a re-near in order to equip a camera with the lens 111 for close-up photography and to carry out image formation of the picture of the negative film 6 developed negatives to the image sensor 8.

[0069]After the output signal of the image sensor 8 is amplified by the preamplifier 9, via the luminance signal processing circuit 10, the chrominance signal processing circuit 11, and FM modulation circuit 12, After being inputted into the A/D conversion circuit 112 by the side of the image processing unit connected with the camera in code and being changed into a digital signal here, graphical data compression is carried out in the graphical-data-compression circuit 113, and it memorizes in the store circuit 114. Then, it is restored to the original picture in the image restoration circuit 43, and is reversed in the NEGAPOJI inverting circuit 115. When a positive film is used, necessity does not have this processing. And after being changed into an analog signal in the D/A conversion circuit 44, it is outputted to the monitor 46 via the monitor drive circuit 45, and a picture is displayed.

[0070]Then, the same image-processing processing as the image processing unit shown previously is performed, the information with which a lab device should be provided from address selection information and image processing information in the memory-signals creation circuit 116 is created, and this information is transmitted to the memory driving circuit 17 by the side of a camera, and is memorized by the memory 18. If print creation submits the memory 18 for the developed film 6 to a lab, a high-definition print will be obtained by performing the same lab processing as the above-mentioned.

[0071]There is an advantage of this example of improvement in the ability to perform image processing, even when the memory 18 used at the time of photography is lost or a memory content is eliminated. As explained in full detail above, while a user looks at the display of a monitor, with the camera and image processing unit of this invention, image processing of the film taken a photograph can be performed.

[0072]In the lab device side which creates image processing information using a hundreds of thousands of pixels image sensor, since image processing is carried out after digitizing the picture of a negative film with resolution of 10 million pixels or more, the print after created processing serves as high definition.

[0073]According to the above-mentioned embodiment, the following composition is obtained.

(1) In [monitor a photographic subject by an electronic view finder, and] the camera which can be exposed on a film with a magnetic recording part this monitor image, the imaging means which outputs the signal for copying out an object image in the above-mentioned electronic view finder, and exposing on the above-mentioned film -- abbreviated -- to the same timing. The exposure information memory measure which memorizes the information from the above-mentioned imaging means, and the magnetic recording means which carries out magnetic recording of the exposure information memorized by the above-mentioned exposure information memory measure at least and the corresponding address information to the magnetic recording part of the above-mentioned film, The

camera possessing a read-out means to read the exposure information memorized by the above-mentioned exposure information memory measure, and to display in the above-mentioned electronic view finder, and the picture information processing means which processes the picture information by which read-out was carried out [above-mentioned], and makes the above-mentioned exposure information memory measure restore the this processed picture.
(2) In the lab device printed using the exposure information memorized by the developing film used for the camera of the above-mentioned (1) description, and the above-mentioned exposure information memory measure, The reading means which reads the above-mentioned exposure information and corresponding address information in the magnetic recording part of the above-mentioned film, The exposure information reading means which reads the exposure information memorized by the above-mentioned exposure information memory measure or processing exposure information based on the above-mentioned reading means, The image scanner means which reads picture information from the above-mentioned developing film based on the above-mentioned reading means, A lab device possessing an image restoration means to correct the scanner information read by the above-mentioned image scanner means based on the information on the above-mentioned exposure information reading means, and the print means printed based on the output of a described image correcting means.
(3) the 1st picture information or it which was recorded on the silver halide film -- abbreviated -- with the memory measure which memorizes the 2nd equivalent picture information. The processing means which processes the 1st or the 2nd picture information memorized by the above-mentioned memory measure, and creates the 3rd picture information, Process the 1st picture information recorded on the above-mentioned silver halide film, and the 3rd picture information created by the above-mentioned processing means, and the 4th picture information is created, The image-processing system possessing the control means which memorizes the 3rd picture of the above to the above-mentioned memory measure at least in order to create a print from this 4th picture information.
(4) the 1st picture information recorded on the silver halide film -- abbreviated -- with the memory measure which memorizes the 2nd equivalent picture information. The processing means which processes the 2nd picture information memorized by the above-mentioned memory measure, and creates the 3rd picture information, Process the 1st picture information recorded on the above-mentioned silver halide film, and the 3rd picture information created by the above-mentioned processing means, and the 4th picture information is created, The image-processing system possessing the control means which memorizes the 3rd picture information of the above to the above-mentioned memory measure in order to create a print from this 4th picture information.
(5) The memory measure which memorizes the 1st picture information recorded on the silver halide film, The processing means which processes the 1st picture information memorized by the above-mentioned memory measure, and creates the 3rd picture information, Process the 1st picture information recorded on the above-mentioned silver halide film, and the 3rd picture information created by the above-mentioned processing means, and the 4th picture information is created, The image-processing system possessing the control means which memorizes the 3rd picture of the above to the above-mentioned memory measure at least in order to create a print from this 4th picture information.
(6) the photographing optical system which records the 1st picture information on a silver halide film,

and the title 1 above-mentioned picture information -- abbreviated -- with the image sensor for creating the 2nd equivalent picture information. The memory measure which memorizes the optical system for a monitor for making the above-mentioned image sensor create the 2nd picture information, and the 2nd picture information created by the above-mentioned image sensor, The processing means which processes the 2nd picture information memorized by the above-mentioned memory measure, and creates the 3rd picture information, Process the 1st picture information recorded on the above-mentioned silver halide film, and the 3rd picture information created by the above-mentioned processing means, and the 4th picture information is created, The image-processing system possessing the control means which memorizes the 3rd picture information of the above to the above-mentioned memory measure in order to create a print from this 4th picture information.

(7) the photographing optical system which records the 1st picture information on a silver halide film, and the title 1 above-mentioned picture information -- abbreviated -- with the image sensor for creating the 2nd equivalent picture information. The memory measure which memorizes the optical system for a monitor for making the above-mentioned image sensor create the 2nd picture information, and the 2nd picture information created by the above-mentioned image sensor, The mode selection means what kind of processing when processing the 2nd picture information memorized by the above-mentioned memory measure, is performed, and for choosing, The addressing means to which field processing with the above-mentioned selected mode selection means is performed, and for specifying, The processing means for processing the 2nd picture information memorized by the above-mentioned memory measure, the output of the above-mentioned mode selection means, and the output of the above-mentioned addressing means, and creating the 3rd picture information, Process the 1st picture information recorded on the above-mentioned silver halide film, and the 3rd picture information created by the above-mentioned processing means, and the 4th picture information is created, The image-processing system possessing the control means which memorizes the 3rd picture of the above to the above-mentioned memory measure at least in order to create a print from this 4th picture information.

(8) the photographing optical system which records the 1st picture information on a silver halide film, and the title 1 above-mentioned picture information -- abbreviated -- with the image sensor for creating the 2nd equivalent picture information. The memory measure which memorizes the optical system for a monitor for making the above-mentioned image sensor create the 2nd picture information, and the 2nd picture information created by the above-mentioned image sensor, The mode selection means what kind of processing when processing the 2nd picture information memorized by the above-mentioned memory measure, is performed, and for choosing, The addressing means to which field processing with the above-mentioned selected mode selection means is performed, and for specifying, The information setting means how many processings with the above-mentioned selected mode selection means are performed, and for determining, The processing means which processes the 2nd picture information memorized by the above-mentioned memory measure, the output of the above-mentioned mode selection means, the output of the above-mentioned addressing means, and the output of the above-mentioned information setting means, and creates the 3rd picture information, Process the 1st picture information recorded on the above-mentioned silver halide film, and the 3rd picture information created by the above-mentioned processing means, and the 4th picture information is created, The image-processing system possessing the control means which memorizes the 3rd picture of the above to

the above-mentioned memory measure at least in order to create a print from this 4th picture information.
(9) the photographing optical system which records the 1st picture information on a silver halide film, and the title 1 above-mentioned picture information -- abbreviated -- with the image sensor for creating the 2nd equivalent picture information. The memory measure which memorizes the optical system for a monitor for making the above-mentioned image sensor create the 2nd picture information, and the 2nd picture information created by the above-mentioned image sensor, The processing means which processes the 2nd picture information memorized by the above-mentioned memory measure, and creates the 3rd picture information, Process the 1st picture information recorded on the above-mentioned silver halide film, and the 3rd picture information created by the above-mentioned processing means, and the 4th picture information is created, The image-processing system possessing the control means for recording the 3rd picture information of the above on the magnetic recording layer in which it was provided by the above-mentioned silver halide film, in order to create a print from this 4th picture information.
(10) the photographing optical system which records the 1st picture information on a silver halide film, and the title 1 above-mentioned picture information -- abbreviated -- with the image sensor for creating the 2nd equivalent picture information. The memory measure which memorizes the optical system for a monitor for making the above-mentioned image sensor create the 2nd picture information, and the 2nd picture information created by the above-mentioned image sensor, The mode selection means what kind of processing when processing the 2nd picture information memorized by the above-mentioned memory measure, is performed, and for choosing, The addressing means to which field processing with the above-mentioned selected mode selection means is performed, and for specifying, The information setting means how many processings with the above-mentioned selected mode selection means are performed, and for determining, Process the 1st picture information recorded on the above-mentioned silver halide film, and the 3rd picture information created by the above-mentioned processing means, and the 4th picture information is created, The camera with an image-processing function possessing the control means which memorizes described image information to the above-mentioned memory measure in order to create a print from this 4th picture information.
(11) The memory measure which memorizes the 1st picture information recorded on the silver halide film, The processing means which processes the 1st picture information memorized by the above-mentioned memory measure, and creates the 3rd picture information, What kind of processing when processing the 1st picture information memorized by the above-mentioned memory measure, is performed, and the mode selection means to choose, The addressing means to which field processing with the above-mentioned selected mode selection means is performed, and for specifying, The information setting means how many processings with the above-mentioned selected mode selection means are performed, and for determining, The processing means which processes the 1st picture information memorized by the above-mentioned memory measure, the output of the above-mentioned mode selection means, the output of the above-mentioned addressing means, and the output of the above-mentioned information setting means, and creates the 3rd picture information, Process the 1st picture information recorded on the above-mentioned silver halide film, and the 3rd picture information created by the above-mentioned processing means, and the 4th picture information is created, The image-processing system possessing the control means which memorizes the 3rd picture of the above to

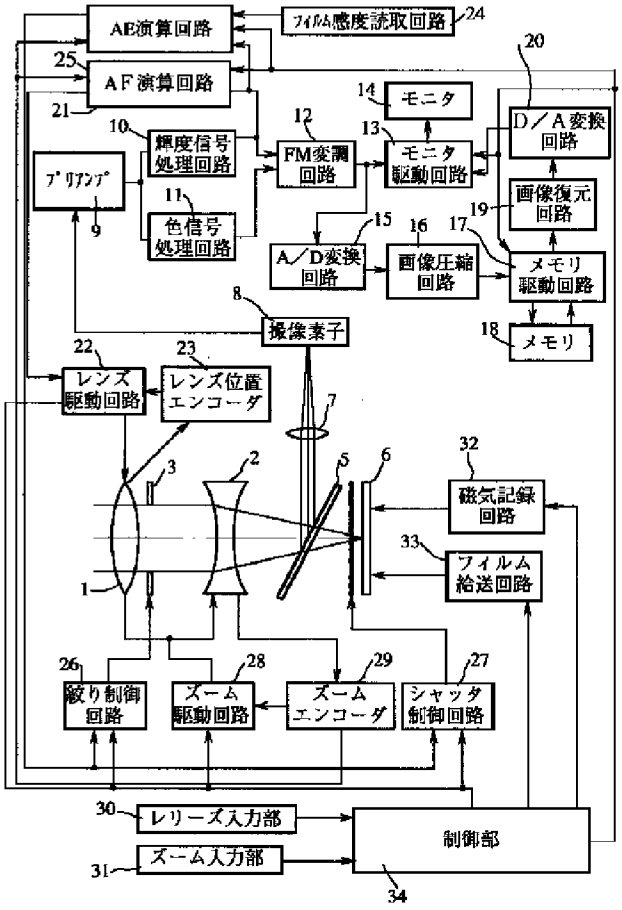
the above-mentioned memory measure at least in order to create a print from this 4th picture information.

DESCRIPTION OF DRAWINGS

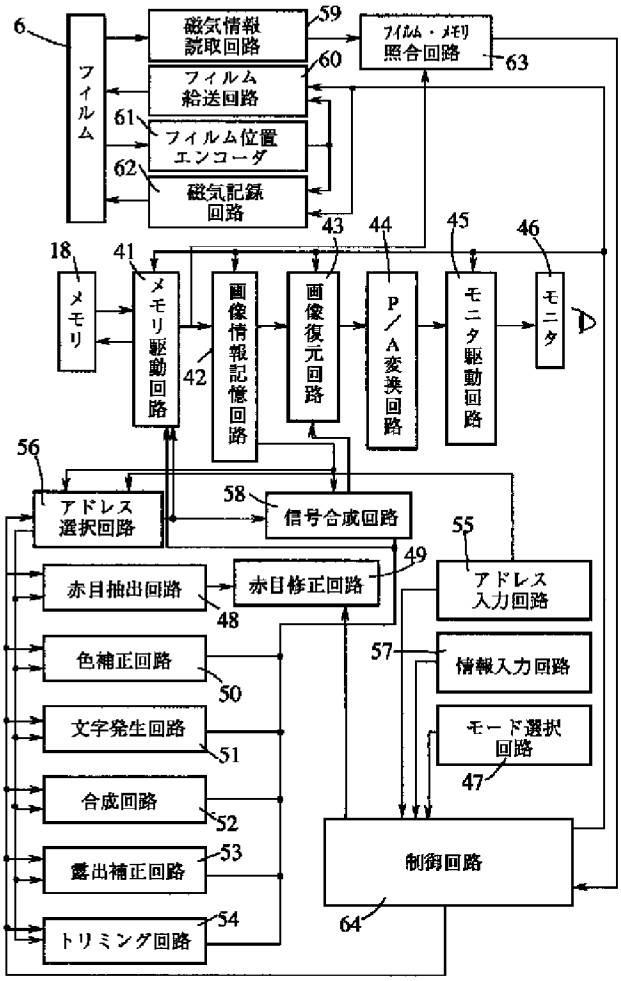
[Brief Description of the Drawings]
[Drawing 1]It is a block diagram showing the composition of the camera of this invention.
[Drawing 2]It is a flow chart which shows operation of the camera of this invention.
[Drawing 3]It is a block diagram showing the composition of the image processing unit of this invention.
[Drawing 4]It is a flow chart which shows operation of the image processing unit of this invention.
[Drawing 5]It is a flow chart which shows operation of the image processing unit of this invention.
[Drawing 6]It is a block diagram showing the composition of the lab device of this invention.
[Drawing 7]It is a flow chart which shows operation of the lab device of this invention.
[Drawing 8]It is a block diagram showing the composition of the example of improvement of the image processing unit of this invention.
[Drawing 9]It is a flow chart which shows operation of the example of improvement of the image processing unit of this invention.
[Drawing 10]It is a block diagram showing the composition of the example of improvement of the lab device of this invention.
[Drawing 11]It is a block lineblock diagram of the 1st example of improvement that constituted the camera and image processing unit of this invention in one.
[Drawing 12]It is a block lineblock diagram of the 2nd example of improvement that constituted the camera and image processing unit of this invention in one.
[Description of Notations]
1, 2 [-- Shutter,] -- A zoom lens, 3 -- It extracts and is 4. -- A half mirror, 5 6 [-- A preamplifier, 10 / -- Luminance signal processing circuit,] -- A film, 7 -- A lens, 8 -- An image sensor, 9 11 -- A chrominance signal processing circuit, 12 -- An FM modulation circuit, 13 -- Monitor drive circuit, 14 [-- Memory driving circuit,] -- A monitor, 15 -- An A/D conversion circuit, 16 -- A graphical-data-compression circuit, 17 18 [-- AF arithmetic circuit,] -- A memory, 19 -- An image restoration circuit, 20 -- D/A conversion circuits 20 and 21 22 -- A lens drive circuit, 23 -- A lens position encoder, 24 -- Film speed read circuit, 25 [-- A zooming drive circuit, 29 / -- A zoom encoder, 30 / -- A release input part, 31 / -- A zoom input part, 32 / -- A magnetic recording circuit, 33 / -- A film feeding circuit, 34 / -- Control section.] -- AE arithmetic circuit, 26 -- A throttling control circuit, 27 -- A shutter control circuit, 28

DRAWINGS

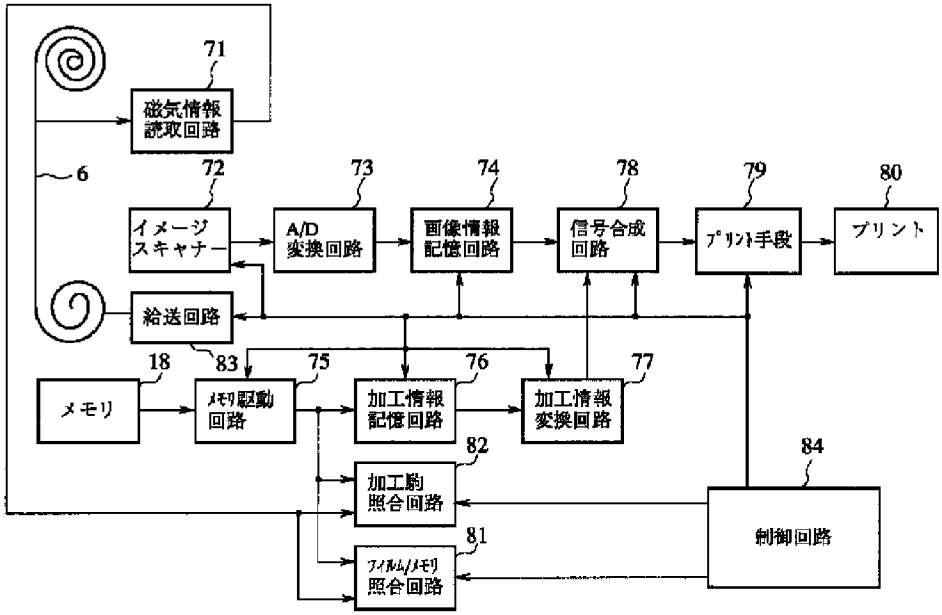
[Drawing 1]



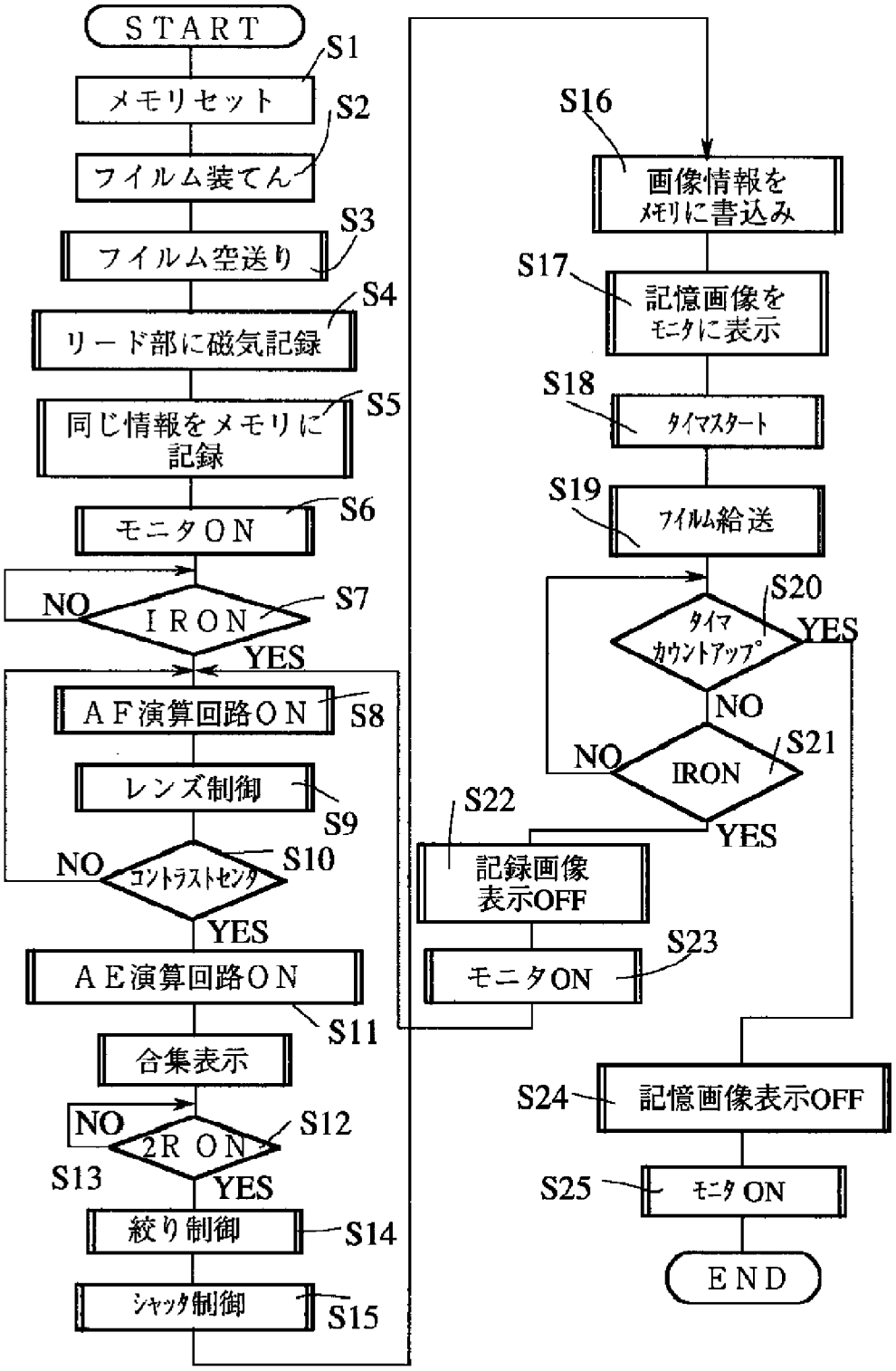
[Drawing 2]


6
フィルム
磁気情報読取回路
59
フィルム・メモリ照合回路
63
フィルム給送回路
60
61
フィルム位置エンコーダ
62
磁気記録回路
43
44
45
46
18
41
メモリ
メモリ駆動回路
42
画像情報記憶回路
画像復元回路
P／A変換回路
モニタ駆動回路
モニタ
56
アドレス選択回路
58
信号合成回路
55
49
赤目抽出回路
赤目修正回路
アドレス入力回路
48
色補正回路
57
情報入力回路
50
文字発生回路
モード選択回路
51
47
合成回路
52
53
露出補正回路
制御回路
54
64
トリミング回路

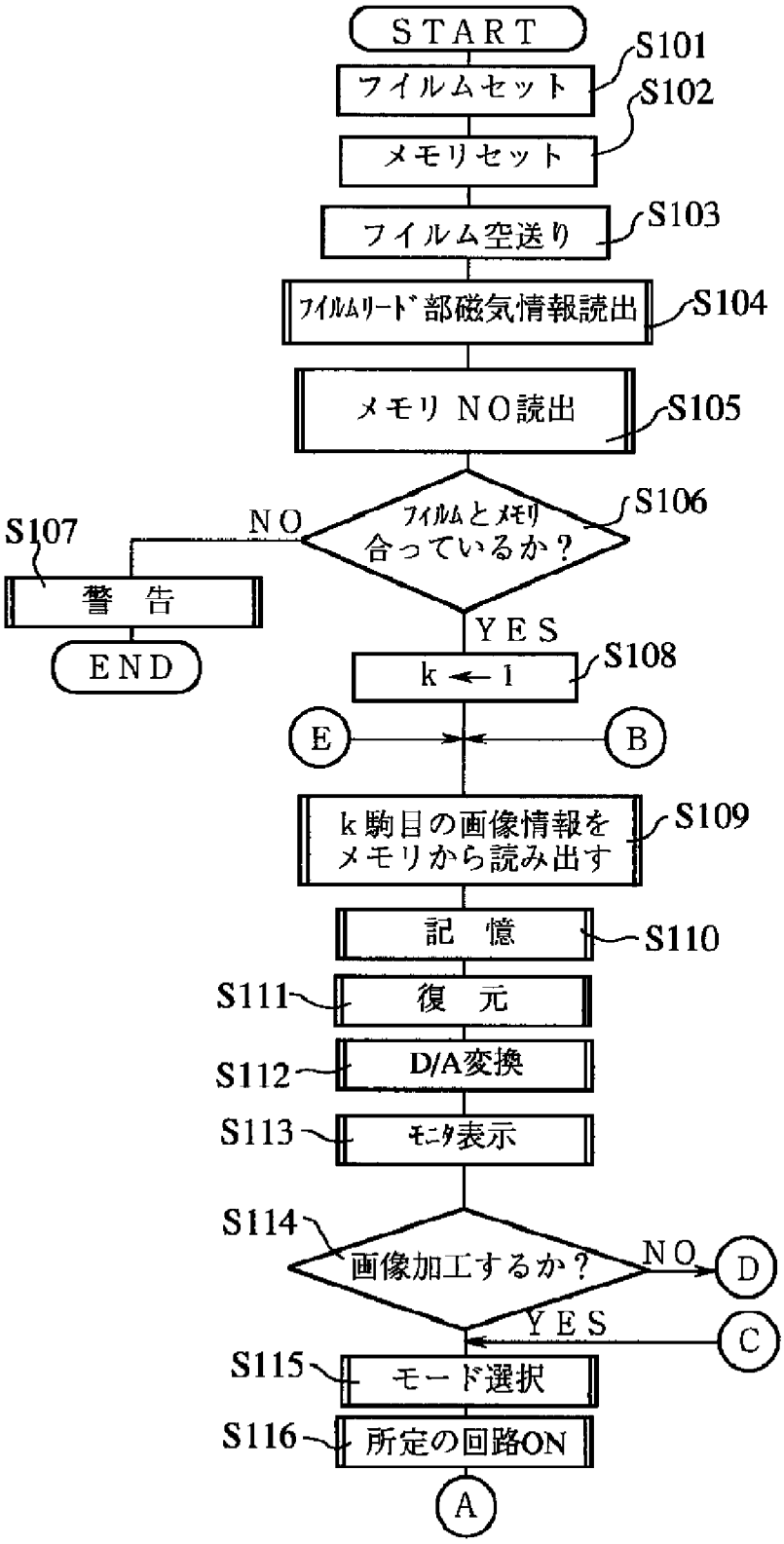
[Drawing 3]


71
磁気情報読取回路
6
72
73
74
78
79
80
イメージスキャナー
A/D変換回路
画像情報記憶回路
信号合成回路
プリント手段
プリント
給送回路
83
18
75
76
77
メモリ
メモリ駆動回路
加工情報記憶回路
加工情報変換回路
82
84
加工制照合回路
制御回路
81
フィルム/メモリ照合回路

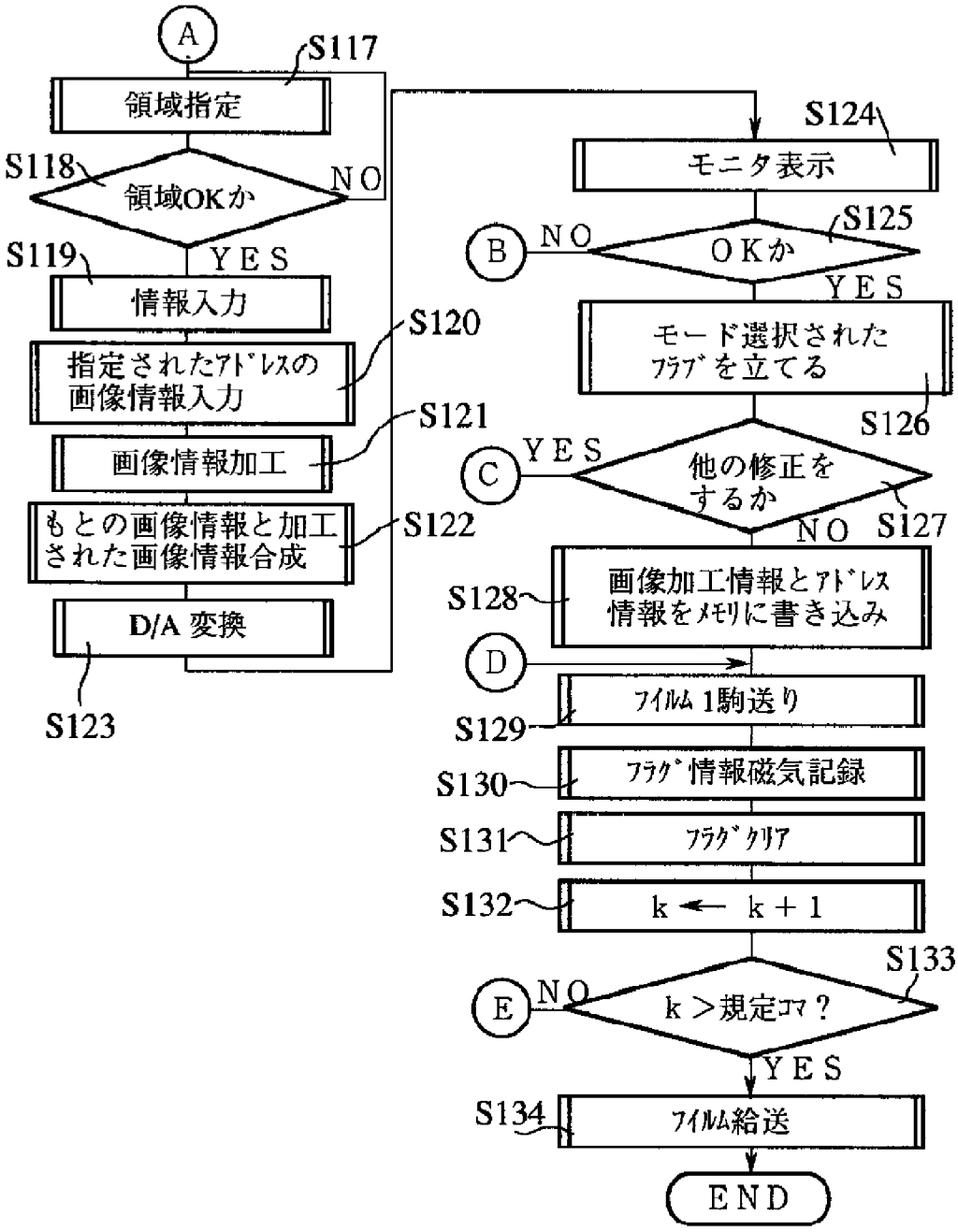
[Drawing 4]



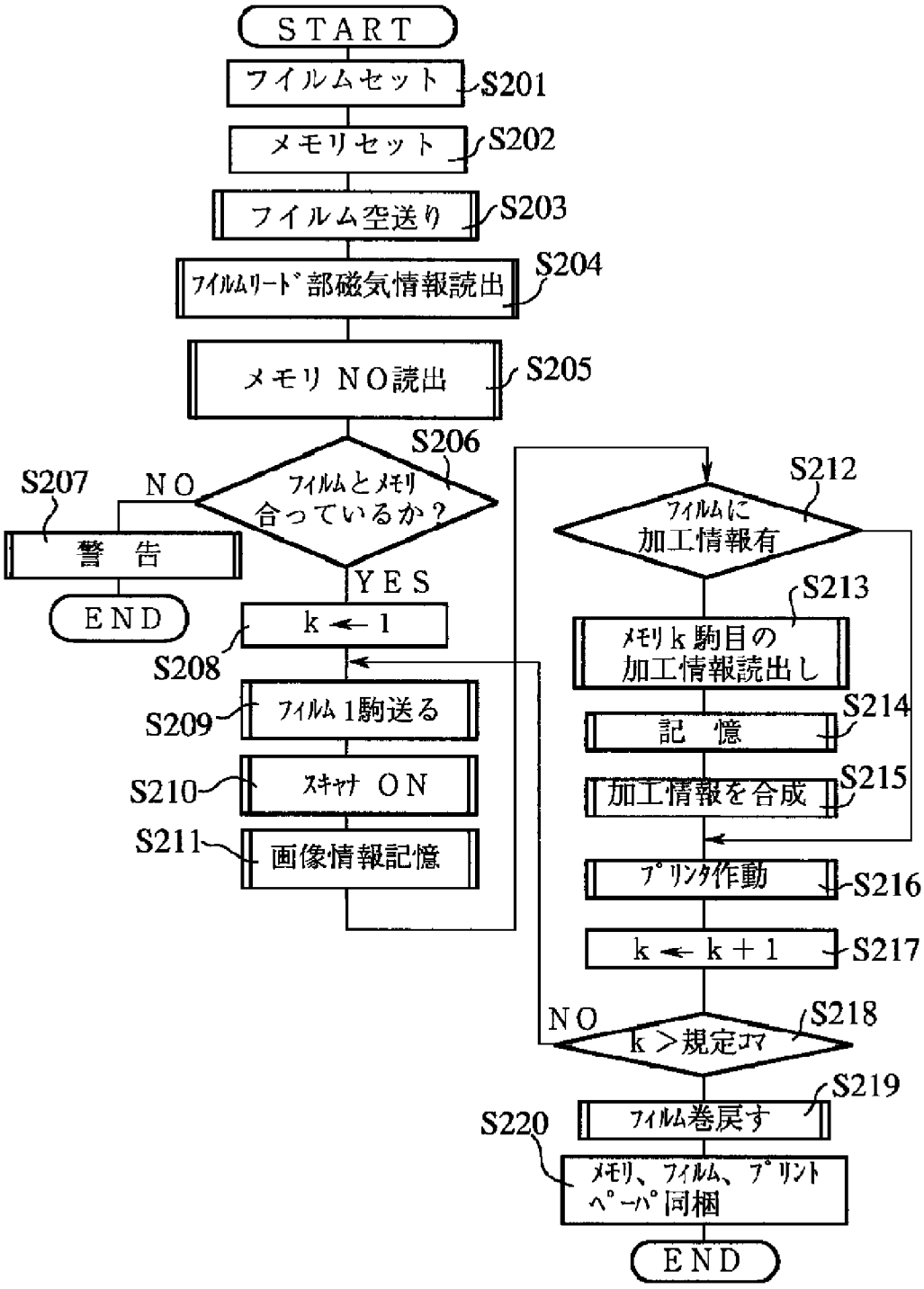
[Drawing 5]


START
S101
フイルムセット
S102
メモリセット
S103
フイルム空送り
S104
ﾌｲﾙﾑﾘｰﾄﾞ部磁気情報読出
S105
メモリ NO読出
S106
ﾌｲﾙﾑとﾒﾓﾘ 合っているか？
NO
S107
警 告
END
YES
S108
k ← 1
E
B
S109
k駒目の画像情報を メモリから読み出す
記 憶
S110
S111
復 元
S112
D/A変換
S113
ﾓﾆﾀ表示
S114
画像加工するか？
NO
D
YES
C
S115
モード選択
S116
所定の回路ON
A

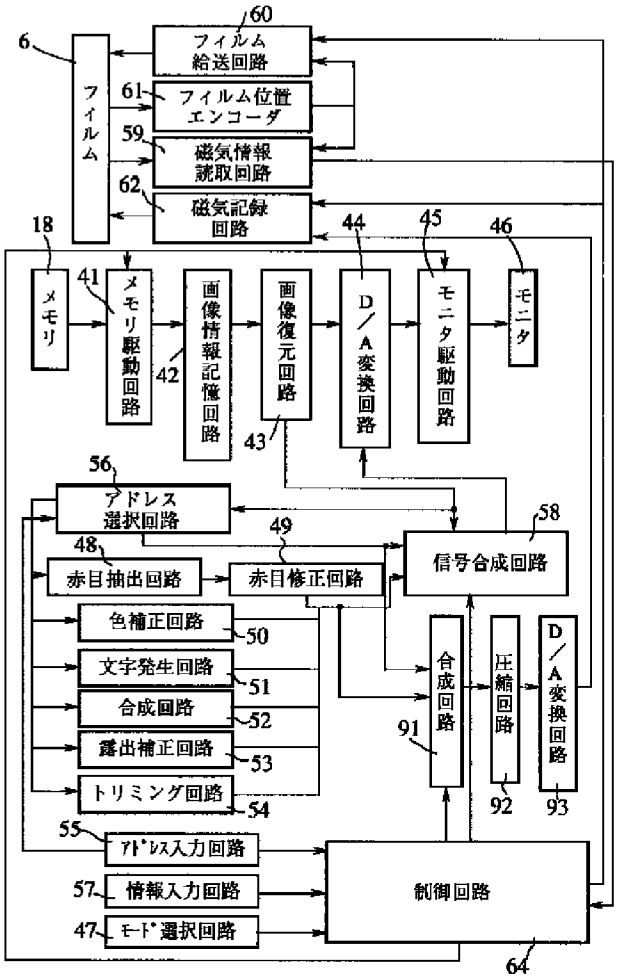
[Drawing 6]


A
S117
領域指定
S118
領域OKか
NO
YES
S119
情報入力
S120
指定されたｱﾄﾞﾚｽの
画像情報入力
S121
画像情報加工
S122
もとの画像情報と加工
された画像情報合成
D/A 変換
S123
S124
モニタ表示
B
NO
S125
OKか
YES
モード選択された
ﾌﾗｸﾞを立てる
S126
C
YES
他の修正を
するか
NO
S127
S128
画像加工情報とｱﾄﾞﾚｽ
情報をﾒﾓﾘに書き込み
D
ﾌｲﾙﾑ 1駒送り
S129
S130
ﾌﾗｸﾞ情報磁気記録
S131
ﾌﾗｸﾞｸﾘｱ
S132
k ← k + 1
S133
E
NO
k ＞規定ｺﾏ？
YES
S134
ﾌｲﾙﾑ給送
END

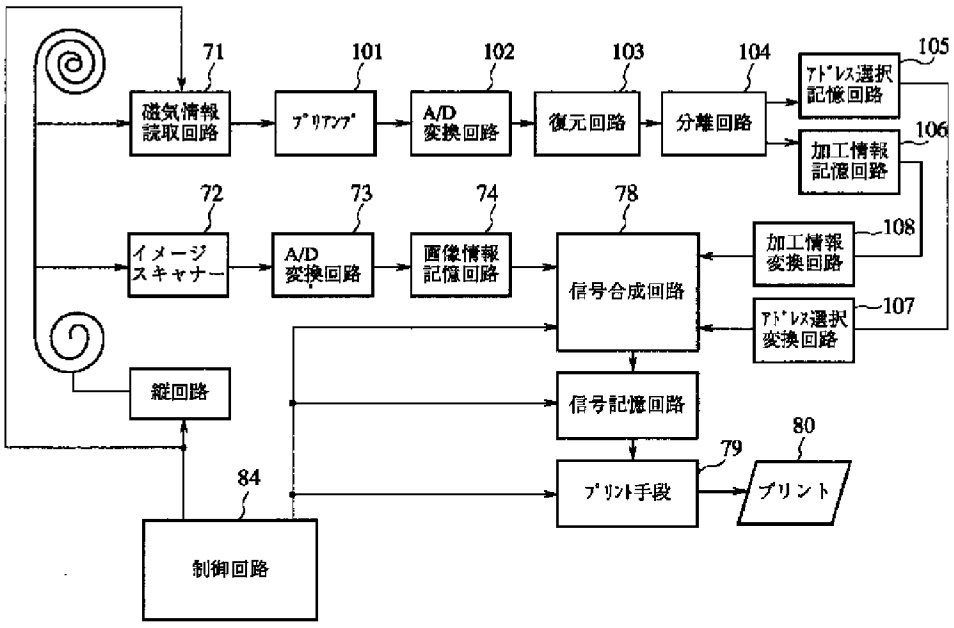
[Drawing 7]


START
フイルムセット
S201
メモリセット
S202
フイルム空送り
S203
ﾌｲﾙﾑﾘｰﾄﾞ部磁気情報読出
S204
メモリ NO読出
S205
S206
フイルムとメモリ 合っているか？
S207
NO
警 告
END
YES
k ← 1
S208
フイルム1駒送る
S209
ｽｷｬﾅ ON
S210
画像情報記憶
S211
S212
フイルムに 加工情報有
S213
メモリk駒目の 加工情報読出し
S214
記 憶
S215
加工情報を合成
ﾌﾟﾘﾝﾀ作動
S216
k ← k + 1
S217
NO
k ＞規定ｺﾏ
S218
S219
ﾌｲﾙﾑ巻戻す
S220
メモリ、フイルム、ﾌﾟﾘﾝﾄ ﾍﾟｰﾊﾟ同梱
END

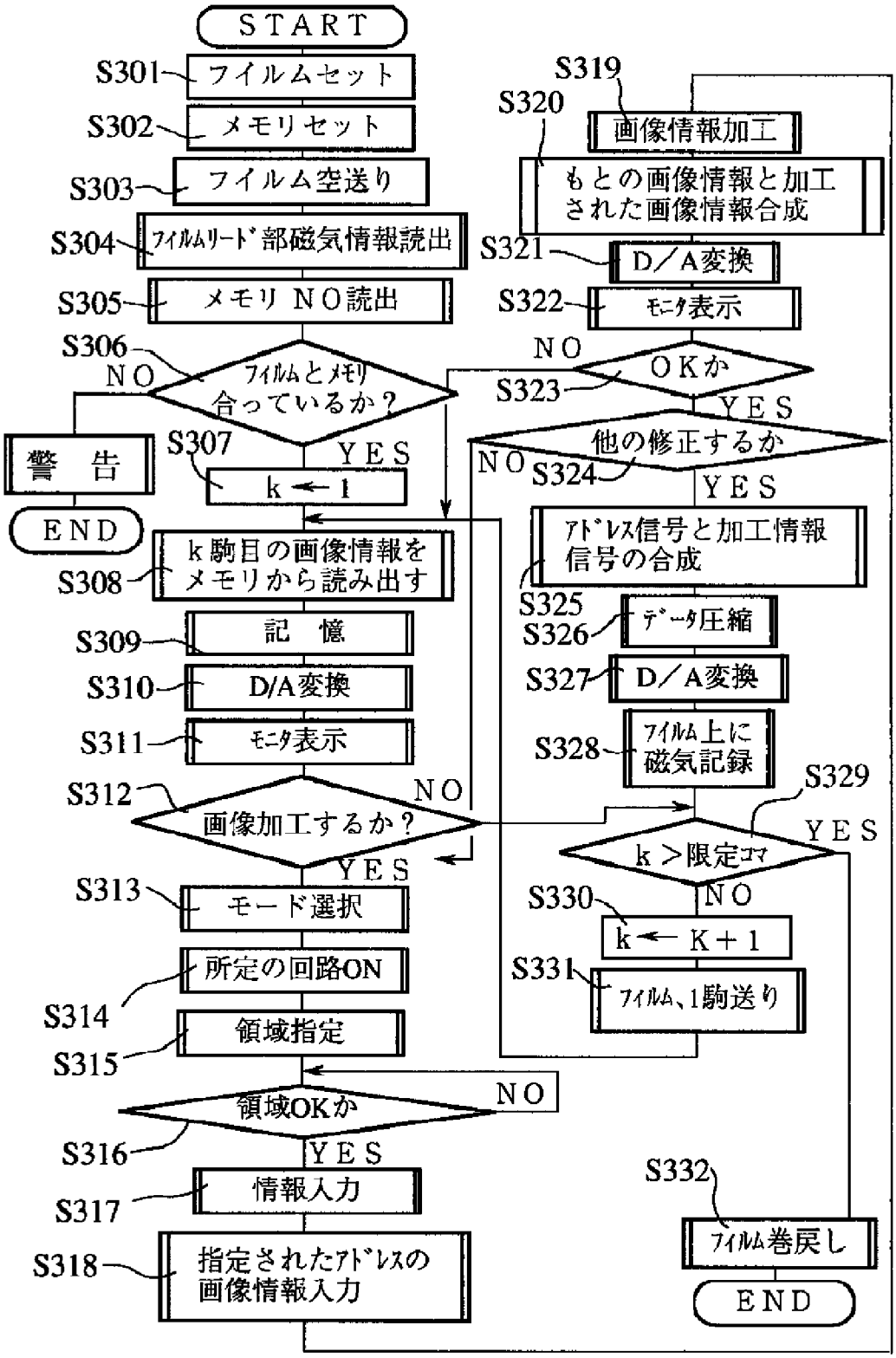
[Drawing 8]


フィルム
フィルム給送回路
フィルム位置エンコーダ
磁気情報読取回路
磁気記録回路
メモリ
メモリ駆動回路
画像情報記憶回路
画像復元回路
D/A変換回路
モニタ駆動回路
モニタ
アドレス選択回路
赤目抽出回路
赤目修正回路
信号合成回路
色補正回路
文字発生回路
合成回路
露出補正回路
トリミング回路
合成回路
圧縮回路
D/A変換回路
アドレス入力回路
情報入力回路
モード選択回路
制御回路

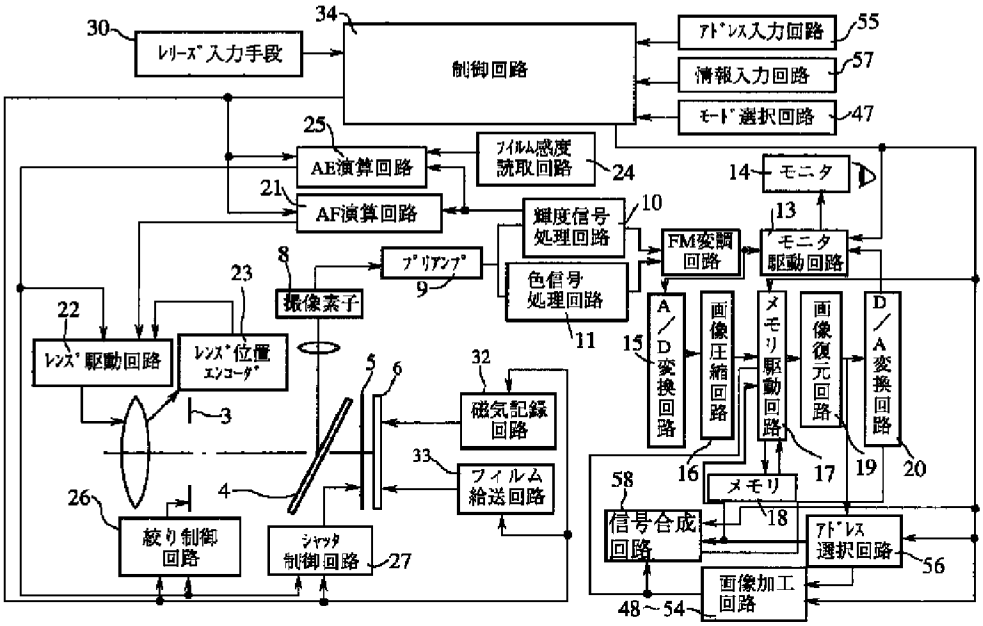
[Drawing 9]


磁気情報読取回路
プリアンプ
A/D変換回路
復元回路
分離回路
アドレス選択記憶回路
加工情報記憶回路
イメージスキャナー
A/D変換回路
画像情報記憶回路
信号合成回路
加工情報変換回路
アドレス選択変換回路
縦回路
信号記憶回路
プリント手段
プリント
制御回路

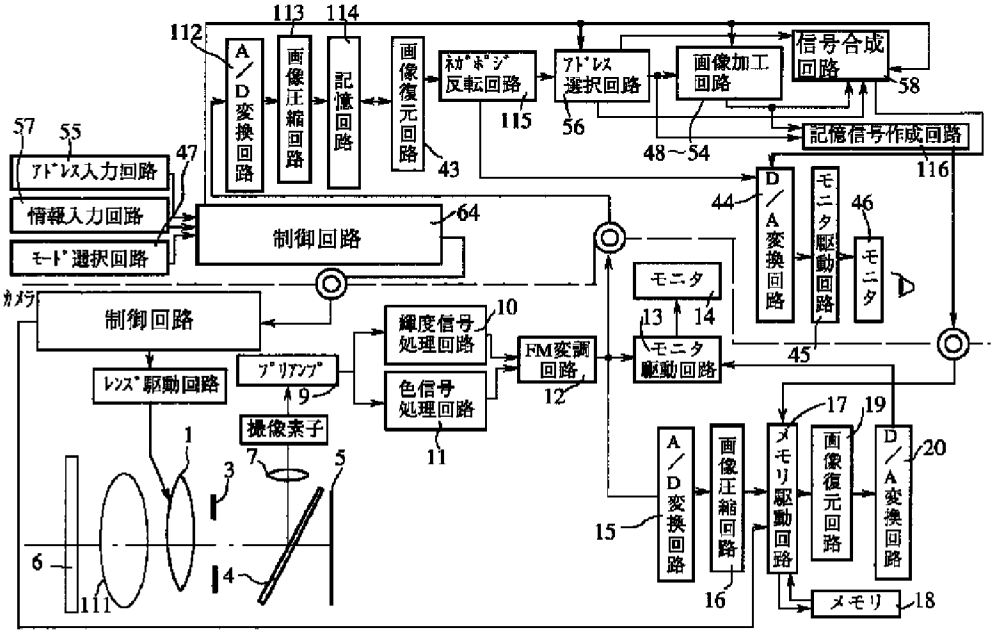
[Drawing 10]



[Drawing 11]



[Drawing 12]



CORRECTION OR AMENDMENT

[Kind of official gazette]Printing of amendment by regulation of Patent Law Article 17 of 2
[Section Type] The 2nd Type of the part VI gate

[Publication date]Heisei 13(2001) October 26 (2001.10.26)

[Publication No.]JP,7-281285,A
[Date of Publication]Heisei 7(1995) October 27 (1995.10.27)
[Annual volume number] Publication of patent applications 7-2813
[Application number]Japanese Patent Application No. 6-73402
[The 7th edition of International Patent Classification]
G03B 17/24

27/32

[FI]
G03B 17/24

27/32 B

[Written Amendment]
[Filing date]Heisei 13(2001) January 26 (2001.1.26)
[Amendment 1]
[Document to be Amended]Description
[Item(s) to be Amended]Claims
[Method of Amendment]Change
[Proposed Amendment]
[Claim(s)]
[Claim 1]the 1st picture information recorded on a silver halide film -- abbreviated -- a memory measure which memorizes the 2nd equivalent picture information,
A processing means which processes the 2nd picture information memorized by the above-mentioned memory measure, and creates the 3rd picture information,
Process the 1st picture information recorded on the above-mentioned silver halide film, and the 3rd picture information created by the above-mentioned processing means, and the 4th picture information is created, An image-processing system possessing a control means which memorizes the 3rd picture information of the above to the above-mentioned memory measure in order to create a print from this 4th picture information.
[Claim 2]A photographing optical system which records the 1st picture information on a silver halide film,
the 1st picture information of the above -- abbreviated -- an image sensor for creating the 2nd equivalent picture information,
An optical system for a monitor for making the above-mentioned image sensor create the 2nd picture information,
A memory measure which memorizes the 2nd picture information created by the above-mentioned image sensor,
A mode selection means what kind of processing when processing the 2nd picture information

memorized by the above-mentioned memory measure, is performed, and for choosing,
An addressing means to which field processing with the above-mentioned selected mode selection means is performed, and for specifying,
A processing means for processing the 2nd picture information memorized by the above-mentioned memory measure, an output of the above-mentioned mode selection means, and an output of the above-mentioned addressing means, and creating the 3rd picture information,
An image-processing system comprising:
The 1st picture information recorded on the above-mentioned silver halide film.
A control means which memorizes the 3rd picture of the above to the above-mentioned memory measure at least in order to process the 3rd picture information created by the above-mentioned processing means, to create the 4th picture information and to create a print from this 4th picture information.

[Claim 3]A memory measure which reads and memorizes the 1st picture information recorded on a silver halide film,
What kind of processing when processing the 1st picture information memorized by the above-mentioned memory measure, is performed, and a mode selection means to choose,
An addressing means to which field processing with the above-mentioned selected mode selection means is performed, and for specifying,
An information setting means how many processings with the above-mentioned selected mode selection means are performed, and for determining,
A processing means which processes the 1st picture information memorized by the above-mentioned memory measure based on an output of the above-mentioned mode selection means, an output of the above-mentioned addressing means, and an output of the above-mentioned information setting means, and creates the 3rd picture information,
It is based, process the 3rd picture information created by the 2nd processing means of the above in the 1st picture information recorded on the above-mentioned silver halide film, and the 4th picture information is created, An image-processing system possessing a control means which memorizes the 3rd picture of the above to the above-mentioned memory measure at least in order to create a print from this 4th picture information.
[Amendment 2]
[Document to be Amended]Description
[Item(s) to be Amended]0006
[Method of Amendment]Change
[Proposed Amendment]
[0006]
[Means for Solving the Problem]To achieve the above objects, in the 1st mode of this invention. the 1st picture information recorded on a silver halide film -- abbreviated -- with a memory measure which memorizes the 2nd equivalent picture information. A processing means which processes the 2nd picture information memorized by the above-mentioned memory measure, and

creates the 3rd picture information, In order to process the 1st picture information recorded on the above-mentioned silver halide film, and the 3rd picture information created by the above-mentioned processing means, to create the 4th picture information and to create a print from this 4th picture information, a control means which memorizes the 3rd picture information of the above to the above-mentioned memory measure is provided. A photographing optical system which memorizes the 1st picture information on a silver halide film in the 2nd mode, the 1st picture information of the above -- abbreviated -- with an image sensor for creating the 2nd equivalent picture information. A memory measure which memorizes an optical system for a monitor for making the above-mentioned image sensor create the 2nd picture information, and the 2nd picture information created by the above-mentioned image sensor, A mode selection means what kind of processing when processing the 2nd picture information memorized by the above-mentioned memory measure, is performed, and for choosing, An addressing means to which field processing with the above-mentioned selected mode selection means is performed, and for specifying, A processing means for processing the 2nd picture information memorized by the above-mentioned memory measure, an output of the above-mentioned mode selection means, and an output of the above-mentioned addressing means, and creating the 3rd picture information, In order to process the 1st picture information recorded on the above-mentioned silver halide film, and the 3rd picture information created by the above-mentioned processing means, to create the 4th picture information and to create a print from this 4th picture information, a control means which memorizes the 3rd picture of the above to the above-mentioned memory measure at least is provided. A memory measure which reads and memorizes the 1st picture information recorded on a silver halide film in the 3rd mode, What kind of processing when processing the 1st picture information memorized by the above-mentioned memory measure, is performed, and a mode selection means to choose, An addressing means to which field processing with the above-mentioned selected mode selection means is performed, and for specifying, An information setting means how many processings with the above-mentioned selected mode selection means are performed, and for determining, A processing means which processes the 1st picture information memorized by the above-mentioned memory measure based on an output of the above-mentioned mode selection means, an output of the above-mentioned addressing means, and an output of the above-mentioned information setting means, and creates the 3rd picture information, Based on the 3rd picture information created by the above-mentioned processing means, process the 1st picture information recorded on the above-mentioned silver halide film, and the 4th picture information is created, In order to create a print from this 4th picture information, a control means which memorizes the 3rd picture of the above to the above-mentioned memory measure at least is provided.

[Amendment 3]

[Document to be Amended]Description

[Item(s) to be Amended]0007

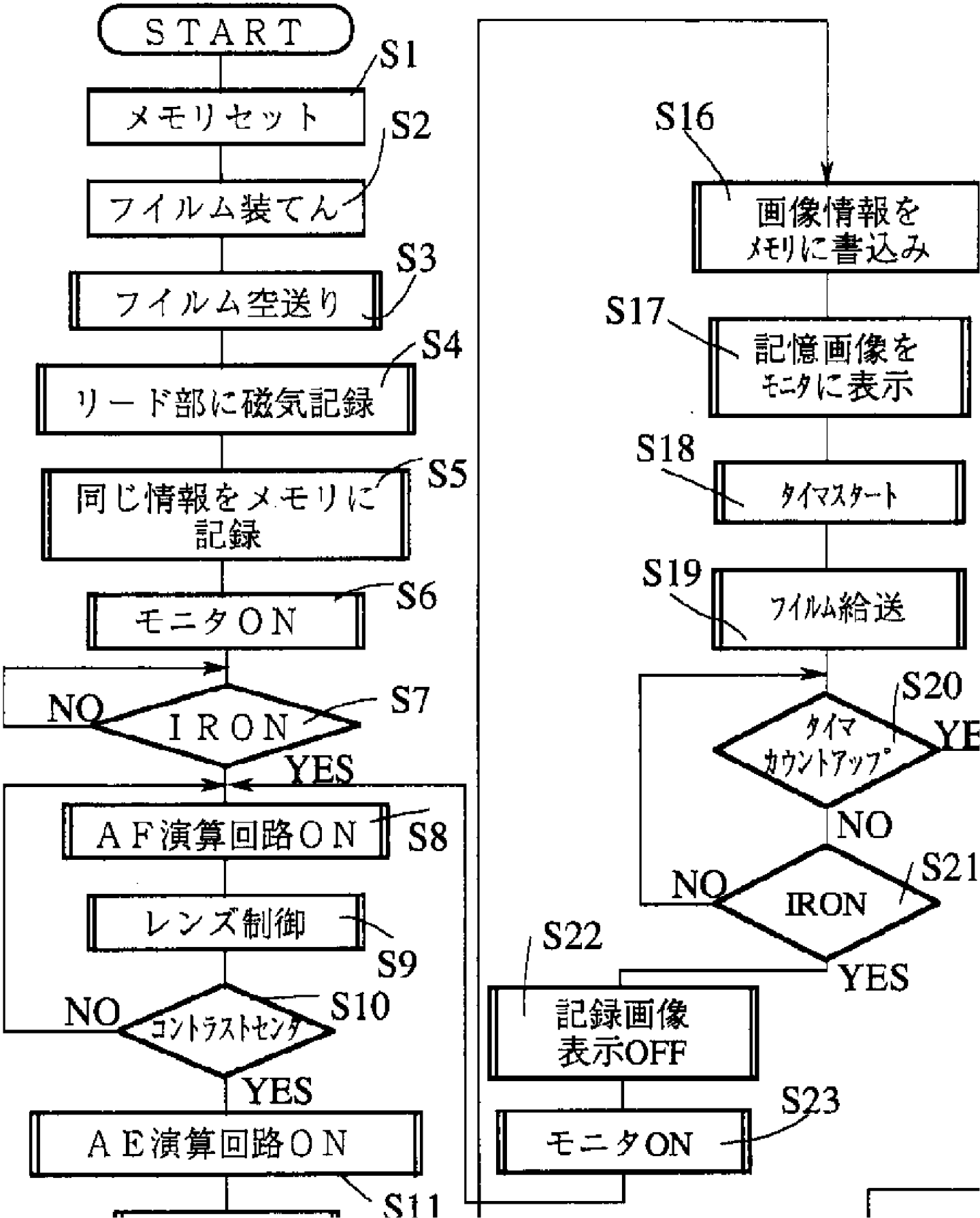
[Method of Amendment]Deletion

[Amendment 4]

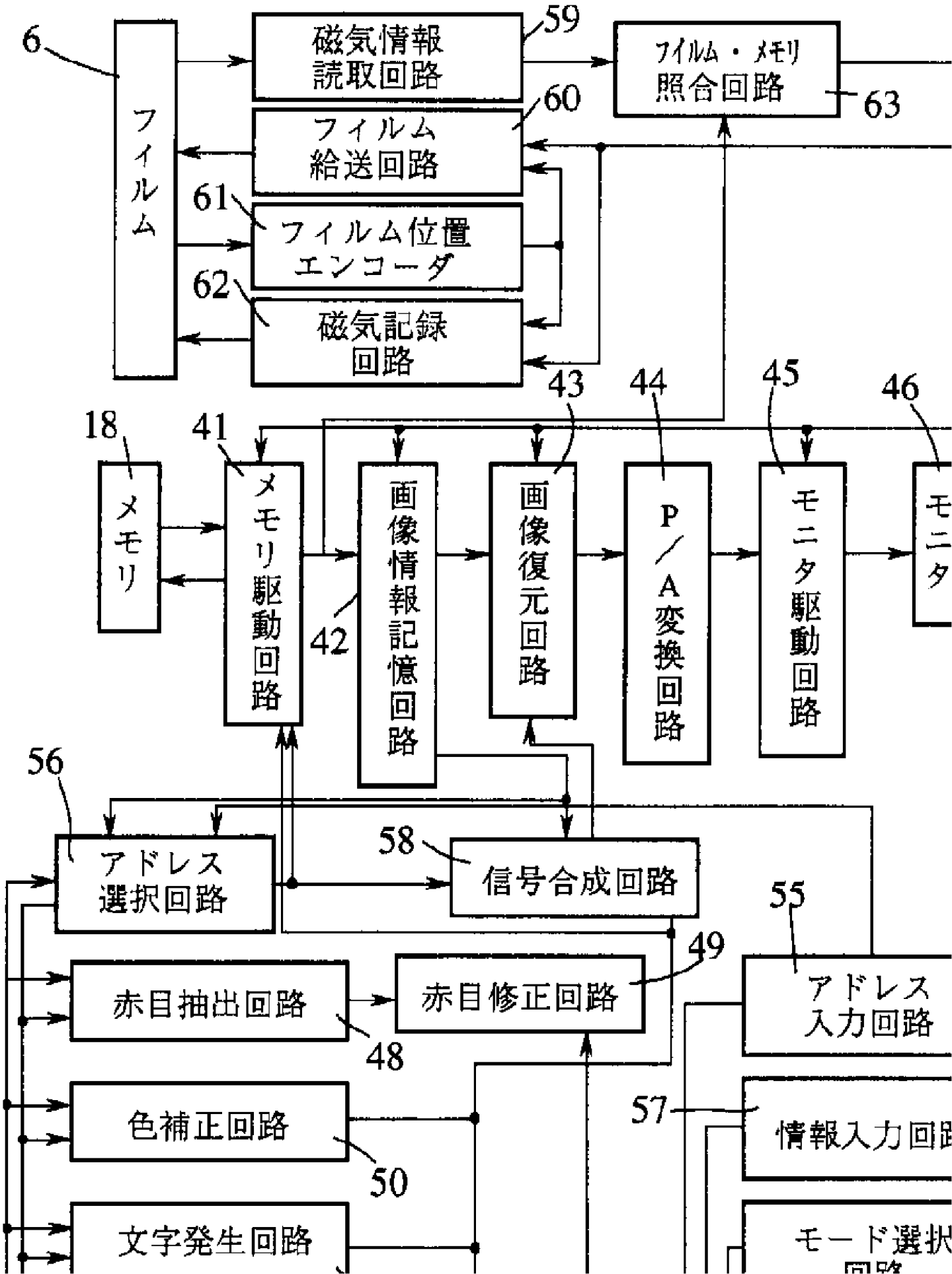
[Document to be Amended]Description
[Item(s) to be Amended]0008
[Method of Amendment]Deletion
[Amendment 5]
[Document to be Amended]Description
[Item(s) to be Amended]0009
[Method of Amendment]Change
[Proposed Amendment]
[0009]
[Function]namely, the 1st picture information recorded on the memory measure by the silver halide film in the 1st mode of this invention -- abbreviated -- the 2nd equivalent picture information being memorized and, The 2nd picture information memorized by the above-mentioned memory measure by the processing means is processed, and the 3rd picture information is created, In order to process the 1st picture information recorded on the above-mentioned silver halide film, and the 3rd picture information created by the above-mentioned processing means, to create the 4th picture information under control of a control means and to create a print from this 4th picture information, the 3rd picture information of the above is memorized by the above-mentioned memory measure. In the 2nd mode, the 1st picture information is recorded by the photographing optical system on a silver halide film, a monitor optical system and an image sensor -- the 1st picture information of the above -- abbreviated -- the 2nd equivalent picture information being created and, The 2nd picture information created by the memory measure with the above-mentioned image sensor is memorized, It is chosen what kind of processing when processing the 2nd picture information memorized by the above-mentioned memory measure by the mode selection means, is performed, It is specified to which field processing chosen by the above-mentioned mode selection means by the addressing means is performed, The 2nd picture information memorized by the above-mentioned memory measure by the processing means, the output of the above-mentioned mode selection means, and the output of the above-mentioned addressing means are processed, and the 3rd picture information is created, In order to process the 1st picture information recorded on the above-mentioned silver halide film, and the 3rd picture information created by the above-mentioned processing means, to create the 4th picture information under control of a control means and to create a print from this 4th picture information, the 3rd picture of the above is memorized by the above-mentioned memory measure at least. In the 3rd mode, the 1st picture information recorded on the silver halide film by the memory measure is read and memorized, It is chosen what kind of processing when processing the 1st picture information memorized by the above-mentioned memory measure by the mode selection means, is performed, It is specified to which field processing chosen by the above-mentioned mode selection means by the addressing means is performed, It is determined how many processings chosen by the above-mentioned mode selection means by the information setting means are performed, The 1st picture information memorized by the above-mentioned memory measure by the processing means is processed based on the output of

the above-mentioned mode selection means, the output of the above-mentioned addressing means, and the output of the above-mentioned information setting means, and the 3rd picture information is created, In order to process the 1st picture information recorded on the above-mentioned silver halide film based on the 3rd picture information created by the above-mentioned processing means, to create the 4th picture information under control of a control means and to create a print from this 4th picture information, the 3rd picture of the above is memorized by the above-mentioned memory measure at least.

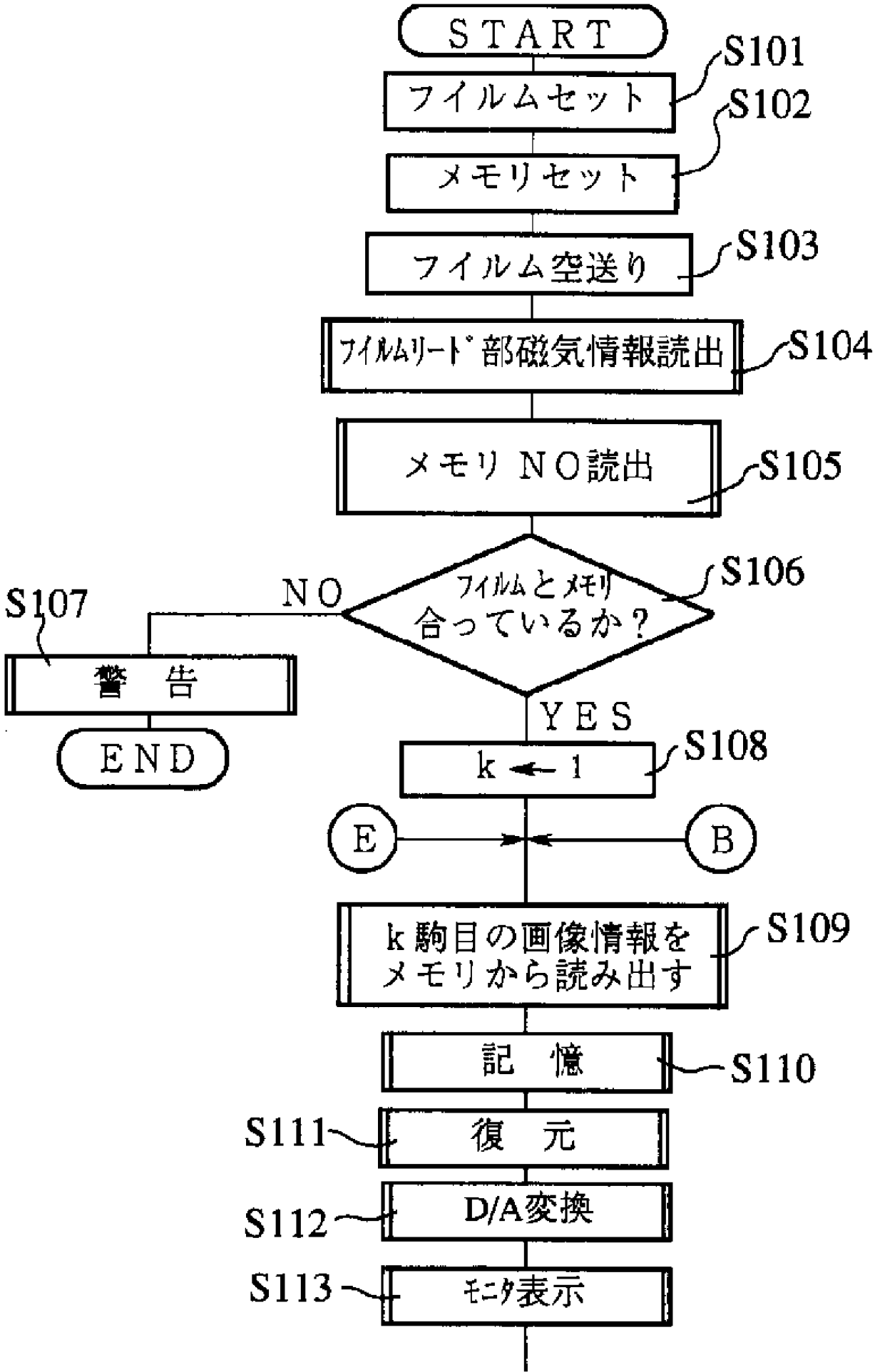
[Amendment 6]
[Document to be Amended]Description
[Item(s) to be Amended]0010
[Method of Amendment]Deletion
[Amendment 7]
[Document to be Amended]Description
[Item(s) to be Amended]0011
[Method of Amendment]Deletion
[Amendment 8]
[Document to be Amended]DRAWINGS
[Item(s) to be Amended]Drawing 2
[Method of Amendment]Change
[Proposed Amendment]
[Drawing 2]


START
S1
メモリセット
S2
フイルム装てん
S3
フイルム空送り
S4
リード部に磁気記録
S5
同じ情報をメモリに記録
S6
モニタON
NO
IRON
S7
YES
AF演算回路ON
S8
レンズ制御
S9
NO
コントラストセンタ
S10
YES
AE演算回路ON
S11
S16
画像情報をメモリに書込み
S17
記憶画像をモニタに表示
S18
タイマスタート
S19
フイルム給送
S20
タイマカウントアップ
YE
NO
NO
IRON
S21
YES
S22
記録画像表示OFF
S23
モニタON

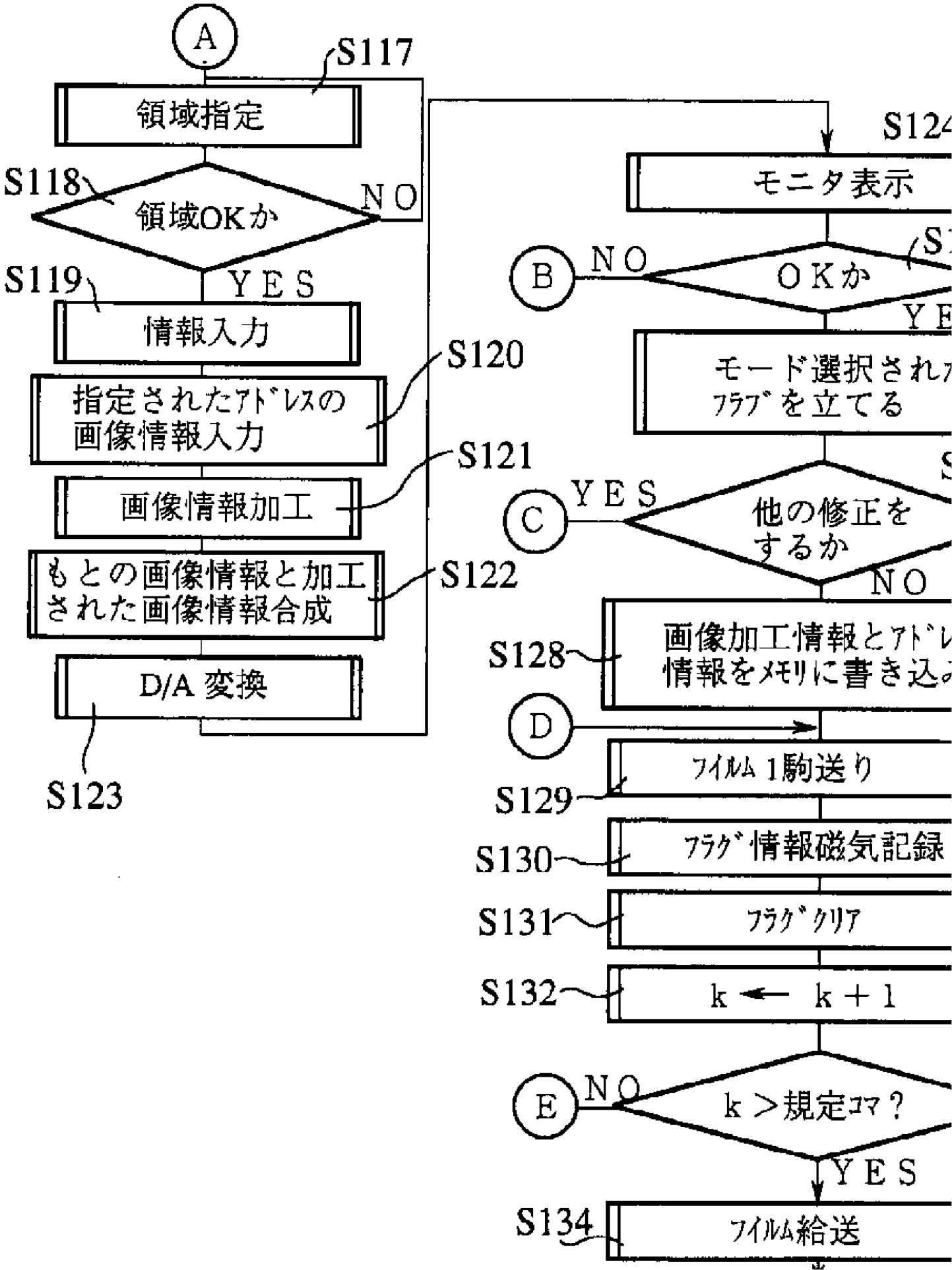
[Amendment 9]
[Document to be Amended]DRAWINGS
[Item(s) to be Amended]Drawing 3
[Method of Amendment]Change
[Proposed Amendment]
[Drawing 3]


6
フィルム
磁気情報
読取回路
59
フィルム・メモリ
照合回路
63
60
フィルム
給送回路
61
フィルム位置
エンコーダ
62
磁気記録
回路
43
44
45
46
18
41
メモリ
メモリ駆動回路
画像情報記憶回路
42
画像復元回路
P/A変換回路
モニタ駆動回路
モニタ
56
アドレス
選択回路
58
信号合成回路
55
49
赤目抽出回路
赤目修正回路
アドレス
入力回路
48
色補正回路
57
情報入力回路
50
文字発生回路
モード選択
回路

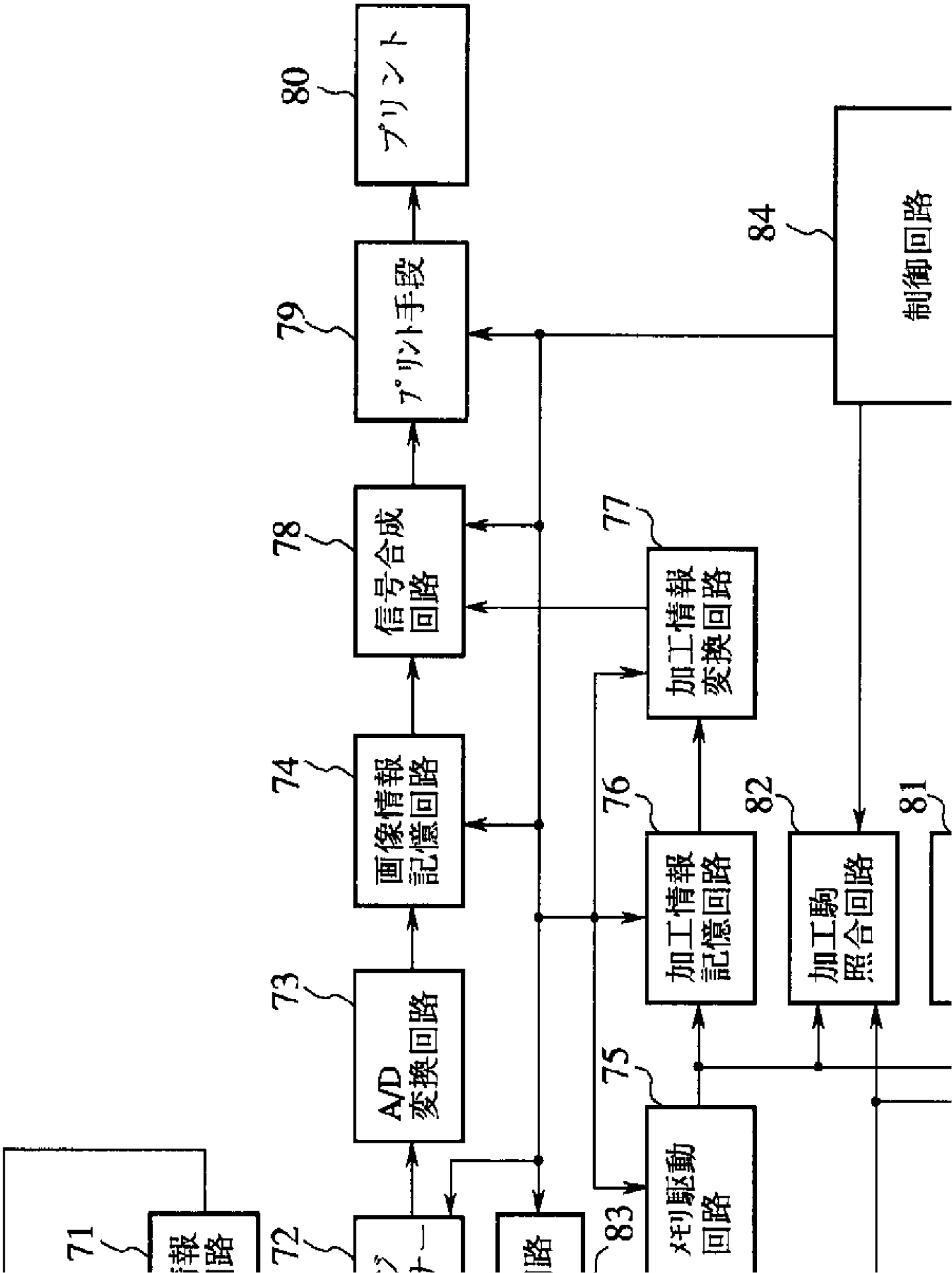
[Amendment 10]
[Document to be Amended]DRAWINGS
[Item(s) to be Amended]Drawing 4
[Method of Amendment]Change
[Proposed Amendment]
[Drawing 4]


START
S101
フイルムセット
S102
メモリセット
フイルム空送り
S103
フイルムリード部磁気情報読出
S104
メモリ NO読出
S105
フイルムとメモリ
合っているか？
S106
NO
S107
警 告
END
YES
k ← 1
S108
E
B
k駒目の画像情報を
メモリから読み出す
S109
記 憶
S110
S111
復 元
S112
D/A変換
S113
モニタ表示

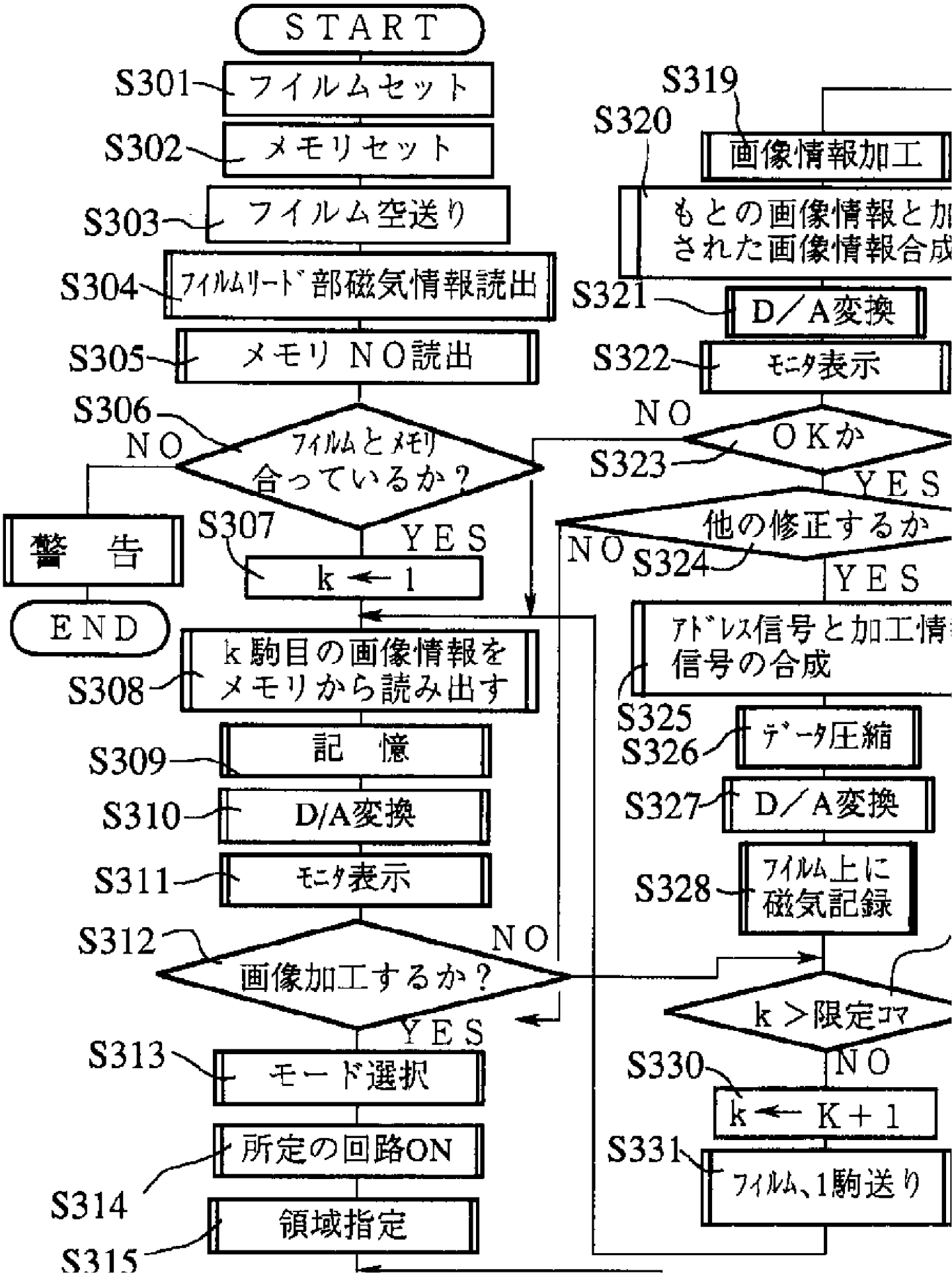
[Amendment 11]
[Document to be Amended]DRAWINGS
[Item(s) to be Amended]Drawing 5
[Method of Amendment]Change
[Proposed Amendment]
[Drawing 5]


A
S117
領域指定
S118
領域OKか
NO
YES
S119
情報入力
S120
指定されたアドレスの
画像情報入力
S121
画像情報加工
S122
もとの画像情報と加工
された画像情報合成
D/A 変換
S123
S124
モニタ表示
B
NO
OKか
YE
モード選択され
フラグを立てる
C
YES
他の修正を
するか
NO
S128
画像加工情報とアド
情報をメモリに書き込
D
フイルム 1駒送り
S129
S130
フラグ情報磁気記録
S131
フラグクリア
S132
k ← k + 1
E
NO
k > 規定コマ?
YES
S134
フイルム給送

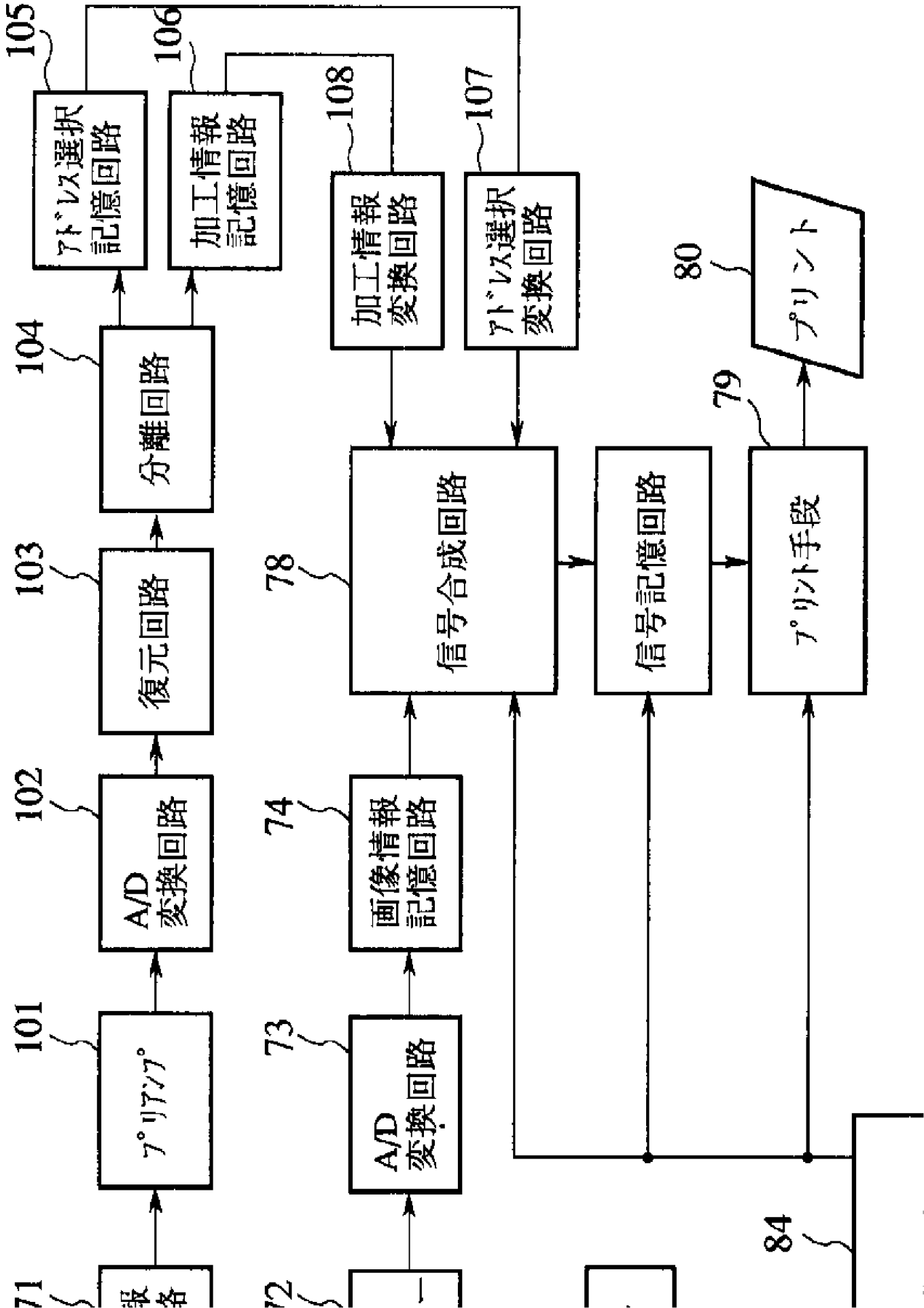
[Amendment 12]
[Document to be Amended]DRAWINGS
[Item(s) to be Amended]Drawing 6
[Method of Amendment]Change
[Proposed Amendment]
[Drawing 6]


80
プリント
79
プリント手段
84
制御回路
78
信号合成回路
77
加工情報変換回路
74
画像情報記憶回路
76
82
81
加工情報記憶回路
加工駒照合回路
73
A/D変換回路
75
メモリ駆動回路
71
72
83

[Amendment 13]
[Document to be Amended]DRAWINGS
[Item(s) to be Amended]Drawing 9
[Method of Amendment]Change
[Proposed Amendment]
[Drawing 9]


START
S301
フイルムセット
S302
メモリセット
S303
フイルム空送り
S304
フィルムリード部磁気情報読出
S305
メモリ NO読出
S306
フィルムとメモリ 合っているか？
NO
警 告
END
YES
S307
k ← 1
S308
k駒目の画像情報を メモリから読み出す
S309
記 憶
S310
D/A変換
S311
モニタ表示
S312
画像加工するか？
NO
YES
S313
モード選択
S314
所定の回路ON
領域指定
S315
S319
画像情報加工
S320
もとの画像情報と加 された画像情報合成
S321
D／A変換
S322
モニタ表示
NO
S323
OKか
YES
他の修正するか
NO
S324
YES
アドレス信号と加工情 信号の合成
S325
S326
データ圧縮
S327
D／A変換
S328
フイルム上に 磁気記録
k ＞限定コマ
NO
S330
k ← K＋1
S331
フイルム、1駒送り

[Amendment 14]
[Document to be Amended]DRAWINGS
[Item(s) to be Amended]Drawing 10
[Method of Amendment]Change
[Proposed Amendment]
[Drawing 10]


105
アドレス選択記憶回路
106
加工情報記憶回路
108
加工情報変換回路
107
アドレス選択変換回路
80
プリント
104
分離回路
79
プリント手段
103
復元回路
78
信号合成回路
信号記憶回路
102
A/D変換回路
74
画像情報記憶回路
101
プリアンプ
73
A/D変換回路
84